

# North Carolina Highway Bulletin

VOL. IV

APRIL, 1923

NO. 2



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A SOIL ROAD IN CUMBERLAND COUNTY—ROUTE 22





1912



1922

## AFTER TEN YEARS IN NORTH CAROLINA:

1912—In 1912 North Carolina constructed its first **TEXACO** Asphalt pavement.

During the ten years which followed, towns, cities, counties and the State itself gradually added to this initial yardage, and **TEXACO** pavements slowly but permanently established themselves in the confidence and good will of the road builders of this State.

1921—By the end of 1921 North Carolina had constructed a million and a half square yards of **TEXACO** Asphalt pavements.

1922—During 1922 any uncertainty which may have lingered in the minds of anyone concerning the quality of service which **TEXACO** pavements were rendering in North Carolina during the period, 1912-1921, was brushed away for good.

In that year this State awarded contracts calling for the construction of 150 miles of its State Highway System with pavements of **TEXACO** Asphalt.

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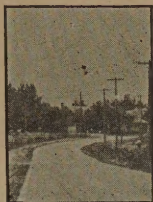


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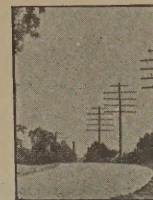


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# NORTH CAROLINA HIGHWAY BULLETIN



VOL. IV, NO. 2

H. K. WITHERSPOON, Editor

APRIL, 1923

## Edwards Ferry Bridge *to* Equal Causeway at Williamston

By WM. G. BROWN, *Resident Engineer*

ONE of the most important projects completed by the Highway Commission is the bridge and its approaches at Williamston. This bridge connects North-eastern North Carolina with the rest of the State and opens a shorter route to Norfolk. Another project is now under construction further up the Roanoke River which is equally important to the sections of the State which it connects.

The Roanoke River is formed by the confluence of the Staunton and the Daws rivers at Clarksville, Va., at a point about five or six miles above the line between North Carolina and Virginia. From its confluence it flows in an easterly direction approximately parallel to the State line until it crosses into North Carolina, about sixty miles southeast of Clarksville, thence meandering in lazy indifference to Albemarle Sound. Because of the peculiarly unfortunate location of the river, or perhaps of the State line, anything like a bridge project for establishing intercourse between the two States met with very little encouragement from the taxpayers of either State, and until the present highway program of this State was gotten underway nothing was accomplished. On account of the barrier formed by the river the citizens of Virginia residing on the south of the Roanoke have been of necessity "Tarheels" and have been forced to do their trading in North Carolina, while for the same reason many citizens of this State living on the north side of the river have become Virginians, at least in doing their trading.

Under the projected State Highway System the Commission has established four State routes crossing the Roanoke over free bridges at Williamston, Edwards Ferry, Weldon, and Roanoke Rapids. When Virginia shall have developed her highway system it is likely that free bridges will be established on State roads at Clarksville and at Good's Ferry, thirty miles below Clarksville, at both of which points there are now toll bridges owned and operated by private capital. With these six free bridges the citizens of each State will have freer intercourse with their neighbors across the line and at the same time be able to become acquainted with their respective States.

The work at Edwards Ferry is divided into two sections namely, Project 138 A and Project 138 B.

former covers the grading, gravel surfacing, and small culvert work between Scotland Neck and Rich Square, a distance of 12.59 miles. The contract for this work was awarded in April, 1922, to Nello Teer, of Durham, and to Richards Bros., of Raleigh, the latter firm to do the culvert work. The work, which will cost approximately \$131,712, is about 75% completed at the present time.

Project 138-B consists of a channel span over the Roanoke River of 350 feet and 5,360 feet of flood-water trestles across the lowlands on either side of the river. The project is similar in many respects to the Williamston Bridge located some 60 miles down the river. The chief difference is in the channel span which, in the Williamston Bridge is a draw span, while the Edwards Ferry Bridge will contain no draw. According to an agreement with the War Department, which controls navigable streams, the bridge will be built four feet higher than is necessary to escape high water, and it is believed that this will afford ample clearance for any water traffic that may develop in the future, there being practically no such traffic at present.


The channel span, which presented many difficulties to the designers on account of its unusual length of 350 feet, will be of the Camel Back Petit type, having a capacity of two 15-ton trucks passing, and will rest on piers on the two banks of the river. The top chord at the middle of the span will be approximately fifty-three feet above the roadway surface at that point. The floor or roadway will be twenty feet wide between curbs and will be made up of 2 in. x 4 in. creosoted lumber set on edge and nailed together. The wearing surface will be a course of rock asphalt two inches thick. Each pier on which the channel span will rest will consist of a cluster of twenty-seven precast reinforced concrete piles, octagonal in shape, eighteen inches in diameter, and sixty-five feet long. These will be capped with a bridge seat, also of reinforced concrete, four feet thick, seven and one-half feet wide, and thirty-one and one-half feet long.

The substructure of the flood-water trestles will consist of precast reinforced concrete piles with a reinforced



# History of Highway Legislation in North Carolina

By H. K. WITHERSPOON, *Editor*

 THE first steps toward highway legislation in North Carolina were taken about eight years ago when certain prominent citizens of the State had a vision of what a network of good roads would mean to North Carolina, and with the conviction of this vision began a campaign for legislative action that would place under way highway legislation of some kind even though it be small. Back in those days motor transportation had not become such a potent factor in the daily life of the citizens of the State and the majority of people did not see the necessity of or the benefits to be derived from a State-wide system of modern highways. Thus those few foresighted citizens met with strong opposition in their fight for better roads. This opposition, however, only served to whet their appetites for the fight and to make stronger their determination to win the cause. From this small beginning sprang the almost perfect piece of highway legislation under which the State Highway Commission of North Carolina is now functioning and which has placed the State in the front ranks of those engaged in highway work, which is enhancing the value of land, and by means of which the State is becoming a leader in agricultural and industrial lines. With such an object lesson before them can any State afford to shift along without laws or means of securing a modern system of highways?

In 1915 a bill was enacted into law which appropriated the magnificent sum of \$10,000 and provided for the appointment of a highway commission and a State highway engineer. With this limited amount of funds at their disposal the work of this first commission was largely of an educational and advisory nature. Some good was accomplished along those lines and the various counties were saved an appreciable amount of money. The real object of this first highway law was in anticipation of the passage of the Federal Aid Road Act, which was ratified in July, 1916.

The General Assembly of 1917 enacted further legislation that placed in the hands of the Highway Commission the funds derived from the registration of motor vehicles, to be expended in the maintenance of roads and bridges on the State system of highways. One of the weakest points of this law was the provision that 70% of the funds collected from any county must be expended in that particular county. It can readily be seen that this was a decided handicap against efficient work since the larger amounts simply reverted

to the wealthier counties—counties having a relatively small area, large mileage of roads, but a fewer number of automobiles did not receive sufficient funds to do any worth-while maintenance work. This unequal division of funds, together with the fact that the responsibility for maintenance still rested with the county officials was not productive of results in the way of efficient maintenance but it did serve to impress upon the people of the State that an adequate maintenance program was necessary, a fact which bore fruit a few years later in the form of one of the most perfect pieces of highway legislation that has ever been enacted by any State.

The passage of the 1919 highway law instilled new life into highway work in North Carolina and, while the law was far from perfect, its enactment symbolized the beginning of real highway work in the State. Briefly the law provided for a commission composed of four members who had entire charge of the construction of roads on the State Highway System; for the working of convicts from the State Prison on highways; for assisting the counties in highway work; and for the expenditure of Federal Aid funds. Revenue from the registration of automobiles was held by the State Treasurer as the "State Highway Fund" and used for the construction of a system of State highways and to meet the allotments of Federal Aid funds. Counties agreeing to pay one-fourth of the cost of construction of a piece of road in that particular county were given preference in priority of construction, the remaining cost being paid from the State highway and Federal Aid funds. While this was the means of adding several miles of improved roads to the State system, it was not a success. In North Carolina, as in every State, there are certain counties which are for various reasons wealthier than others and it was in these counties that most of the construction took place. Not being financially able to furnish their part of the funds necessary to avail themselves of Federal Aid the poorer counties were left without improved roads, and on the whole the construction was more or less piecemeal and resulted as someone has aptly said in the building of "roads that begun nowhere and ended nowhere." Even with this imperfection in the law a large mileage of road was completed or placed under construction during the two years that the Commission functioned under this law. The real good that came from this



defect was that it only made more evident the necessity for placing the building of State highways under State control both from the standpoint of engineering and financing.

The weakest point of the 1919 law was the fact that maintenance, which after all is the most important branch of highway work, was left in the hands of county officials so that, except in the case of roads built with Federal Aid, the State Highway Commission was powerless to enforce the upkeep of roads on the State system. A systems of roads, like a chain, is no better than its worst stretch, and, with all due respect to county officials throughout the country, maintenance work under county or township units is a failure.

Realizing that North Carolina was about to reach the point where the lack of a modern system of highways would seriously hinder her agricultural and industrial growth certain foresighted citizens of the State, notably the North Carolina Good Roads Association, began an intensive campaign early in 1920 which resulted in the passage by the General Assembly of 1921 of the "Doughton-Connor-Bowie Act." The purposes of the law are well expressed in Section 2, which reads as follows: The general purposes of this act are for the State to lay out, take over, establish and construct and assume control of approximately 5,500 miles of hard-surfaced and other dependable highways running to all county seats and to all principal towns, State parks, and principal State institutions, and linking up with

the State highways of adjoining States and with National Highways into National Forest Reserves by the most practicable routes, with special view of development of agriculture, commercial and natural resources of the State, and for the further purpose of permitting the State to assume control of the State Highways, repair, construct, and reconstruct and maintain said highways at the expense of the entire State, and to relieve the counties and cities and towns of the State of this burden." The act provides for a State Highway Commission consisting of a Chairman from the State-at-large and for one Commissioner from each of the nine districts into which the State is divided; all engineering work is in charge of the State Highway Engineer, who is appointed by the Commission; funds are provided for construction by the issuance of serial bonds aggregating \$50,000,000 and maintenance funds from the proceeds of the registration of motor vehicles and from a tax of one cent per gallon on motor vehicle fuels. In addition to these funds, there is allotted to North Carolina by the Federal Aid Act ratified in November, 1921, approximately \$1,709,334, to be matched with an equal amount of State funds.

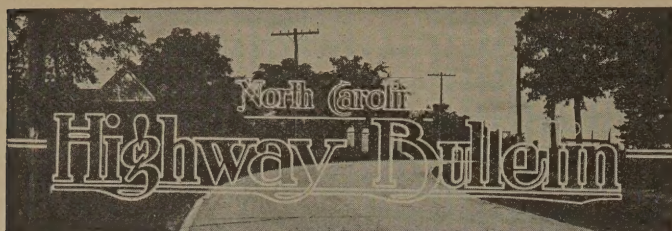
The Legislature, which has just adjourned, recently ratified an amendment to the 1921 law which authorizes an additional bond issue of \$15,000,000 and raises the tax on gasoline from one to three cents per gallon. The fact that this amending bill passed both the House and

*(Continued on page 10)*



IN THE LAND OF THE SKY. SCENE ON PROJECT NO 930—GRAHAM COUNTY





PUBLISHED MONTHLY BY  
NORTH CAROLINA STATE HIGHWAY COMMISSION  
RALEIGH, NORTH CAROLINA

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Address all communications in regard to BULLETIN to the Editor, Box 1140, Raleigh, N. C.

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### Editorial

The State Highway Law of North Carolina underwent a number of changes at the hands of the General Assembly which has just adjourned. In order that those interested in State Highway work may become familiar with the law as it now stands all amendments have been incorporated into the law and it is published in this issue in its entirety.

"Stop-Lock-Listen" will have a more significant meaning after July 1st when the law enacted by the 1923 Legislature requiring all motor vehicles to come to a full stop at grade crossings goes into effect. It is hoped that this law will bring about the desired results and not be a means of fleecing tourists by petty officials, as has been the case in other States where a similar law is in force.

Paving operations have gotten back into full swing with the opening of spring after having been shut down through the winter and a large mileage of hard-surfaced roads should be laid during the next eight or nine months.

Construction has begun on the Edwards Ferry Bridge, a description of which appears elsewhere in this issue. The opening of this bridge will be another step toward reclaiming the northeastern section of this State which has of necessity been forced to do its trading in Virginia.

The creation of State Highway Commissions throughout the country is the natural result of the demand of the public for adequate transportation facilities and that these be furnished in the most economical way. State Highway Engineer Chas. M. Upham has written an interesting article on the effect of a State Highway System on the development of a State, which is published in this issue.

The cost data shown in the tables on pages 18, 19, 20, 21 and 22 should not be taken to be the exact cost of the work but merely as an estimated cost figure. It is obviously impossible to arrive at the cost of a piece of road until the work is completed. Under the column "Work Completed" those figures preceded by an asterisk indicate the final cost but in no other case is this true.



## Contracts Let April 3d

**T**OTAL of one hundred and sixty-eight bids were received on the twenty-five projects which were advertised for letting on April 3rd but on account of a serious cement shortage and on account of prices bid contracts were not awarded on certain of the projects. The results of the letting follow:

Project No. 115, Chowan-Perquimans counties, 11.83 miles of road between Edenton and Hertford, was awarded to Smith Brothers, Inc., of Dallas, Texas. The contract covers the grading, structures, and plain concrete paving and is estimated to cost \$326,300.

Bids were rejected on Project No. 146, Hertford-Bertie counties, and on Project No. 151-B.

Bids were rejected on Projects No. 213, Craven County, and No. 293, Wilson County.

James O. Heyworth, of Chicago, Ill., was successful bidder for the paving on Project No. 329, Columbus County, 12.89 miles of route 20 between Wilmington and Bolton, the estimated cost being \$401,514.30. This contract covers only the surfacing with plain concrete, the project having been previously graded.

The Robeson County Road Commission was successful bidder for the grading and sand-clay surfacing on Project No. 392, consisting of 1.06 miles of road from the Bladen County line toward Bellamy, while the structures were awarded to E. T. Gwathmey, of Richmond. The estimated cost of the entire project is \$77,053.10, the larger part of this cost being for the bridges on the project.

All bids were rejected on Project No. 408, a short stretch of paving on the outskirts of Durham.

Project No. 437, 10.74 miles on route 60 between Lillington and Duke, was awarded to F. P. Holder, Jefferson, Ga., on a bid of \$50,272, this figure including the grading, small culverts, and topsoil surfacing. Structures on the same project were awarded to T. J. Newell, of Clinton, for \$40,646.50, bringing the total estimated cost of the project, including engineering and contingencies, to \$100,010.35.

Project No. 457-A, a section of the Central Highway between Hillsboro and the Durham County line, a distance of 7.45 miles, was awarded to Dicus Bros., of Sanford, and the structures to Richards Bros., of Raleigh. For the present the road will be graded and hard-surfaced at a later date. The cost of grading and structures is estimated to be \$79,080.15.

C. G. Kershaw Contracting Co., of Birmingham, Ala., were awarded the grading on Project No. 485-A, Wake County, consisting of 7.81 miles of road between Neuse and the Franklin County line on route 50. The structures on the same project were awarded to T. J. Newell, of Clinton, N. C. The total estimated cost of grading and structures is \$95,692.46.

Project No. 570, Moore County, consisting of 22.10 miles of route 70 between the Montgomery County line and Aberdeen, was awarded to A. B. McDonald, of Hamlet, for the grading, draining and

The Allport Construction Corp., of Richmond, Va., were awarded Project No. 578, Randolph County, 7.97 miles of road between Randleman and Asheboro on route 70. The contract calls for the grading, structures, and plain concrete surfacing; the total cost being estimated at \$307,925.

The roadwork on Project No. 616, Cabarrus County, was let to the Lee J. Smith Const. Co., of Charlotte, while the structures on the same project were awarded to W. M. Leffer, of Wadeville. The project consists of grading, draining, and topsoil surfacing on 8.59 miles of route 27 between the Mecklenburg and Stanly County lines and is estimated to cost \$118,852.91.

Stearns Bros., of Statesville, were awarded the contract for Project No. 643, Iredell County. The work consists of grading, draining and hard-surfacing 8.57 miles of route 10 from Statesville to the Rowan County line. Asphaltic concrete will be used as surfacing and the entire project is estimated to cost \$321,614.81.

Luten Bridge Company, of Knoxville, were awarded the bridges and culverts on the section of route 27 from Charlotte to the Cabarrus County line. The work, designated as Project No. 659, is estimated to cost \$13,365.16.

Project No. 713-A, Ashe County, 3.53 miles on route 17 between Jefferson and Orion, was awarded to Overstreet & Nance, of Bedford, Va., for plain concrete surfacing at an estimated cost of \$145,783.11. Structures on this project were awarded at a previous letting.

Bids were rejected on Project No. 723, Caldwell County.

Only one bid was received on Project No. 804, Avery County and was rejected as being unreasonably high.

Project No. 835, Henderson County, 6.97 miles of route 20 between the Buncombe and Rutherford County lines, was let to J. B. Ross, Jr., of Pickens, S. C., and to R. C. Stevens, of Asheville, the former to do the grading and surfacing with waterbound macadam and the latter, the structures. This work is estimated to cost \$276,000.

Project No. 882-B, an underpass at Forest City, Rutherford County, was awarded to Michaux Contracting Co., of Morganton, N. C., for \$9,615.

Bids were rejected on Projects No. 930-A, Graham County, and on No. 961-A, Macon County.

A. J. Wardrep, of Knoxville, Tenn., was awarded Project No. 944, Haywood County. The work consists of grading, draining and hard-surfacing 11.66 miles of route 10 between Waynesville and Canton. Asphaltic concrete will be used and the total cost of the work, with structures is estimated at \$409,655.

Project 971, Madison County, 6.74 miles of route 20, between Hot Springs and the Tennessee line, was awarded to the Reynolds Construction Co., of White Pine, Tenn., and to the W. T. Moore Concrete Products Co., of Andrews, N. C., the former to do the grading



# Effect of a State Highway System

By CHARLES M. UPHAM, *Chief Highway Engineer*

**A**NY country's or State's wealth is in proportion to its developed resources and not in proportion to its latent possibilities. There are States with but comparatively few and mediocre resources which by intensive development are much wealthier than other States, though the undeveloped resources are practically unlimited.

The rate of progress or development of a State depends on its commerce, industries, and social activities. This in turn is dependent on the means of communication and transportation.

The early development of our country was slow, due to the fact that transportation was dependent on the rivers, creeks, and other waterways. This water transportation was slow and limited and thus our progress was retarded. As the country grew and civilization extended back from the waterways, the necessity of overland travel was seen and it was not long before the single track trails gave way to the turnpikes. For a while it looked as though these turnpikes would become the universal means of transportation and communication. Development followed these turnpikes and it was found that the greatest progress was in localities where turnpikes afforded a means of transportation in developing natural resources and exchanging commodities.

Practically everything has a place value, or in other words a commodity has a much higher value in one place than another, and the economic difference is obtained by transporting that commodity to the place where it has the highest value. Thus, it is seen that transportation is the keystone in arriving at the economic value of any commodity or developing any locality.

About the time when it was thought that turnpikes had solved the problem of transportation it was found that the cost of maintaining the turnpikes and the time it took to transport commodities long distances was a serious drawback. It was not only necessary to transport the commodity to where it was of the highest value, but it was necessary to take into account the element of time transportation. In other words the economic difference depended not only on the transporting of a commodity to the place of its highest value, but it depended on the time it took to reach that place. About this time in the extensive development of the country it was found that the railroads could better and more economically handle the situation and consequently road

building took a great slump. Turnpikes were neglected; localities that had promised to become important were thrown back and other localities, assisted by the railroad transportation, prospered and expanded.

Finally, localities that had received their extensive development by means of railroad transportation felt the necessity of more intensive development. Modes of traffic changed and it was found that transportation for intensive development could best be afforded by the highway; and so since 1886, railroad construction has decreased and a few years later saw the beginning of the present road building program which today amounts to nearly \$600,000,000 a year; an amount which we are spending simply for the assistance of transportation, or in other words to give commodities a time and place value by means of transportation.

Coal in the ground has a small value, but when transported to other places, has a much higher value. Ore in the mines has little value, but when mined and transported, its value increases many times. Farm produce in the country has one value, but when transported to market it is of considerably more value. Commodities have one value at the point of manufacture and when transported to the consumer have a much higher value; and so it may be seen that the economic balance or increase in value of any article depends on transporting that article to the point where it has the highest time and place value; so it may be easily seen how great a part the means of transportation plays in economic development.

Unlike railroads, the highway must be used by practically everyone, and so all people are interested in highways. Toll roads were soon proven to be unpopular and it was found that road building left to the county and township authorities created only local development, and further, by their limited amount of road work, it was not possible to carry construction on in an economic way or use the advantage of latest developments in all cases.

This condition has caused the creation of State Highway Commissions, whose duty it is to afford a means of transportation to the entire State, and by this transportation afford facilities that would economically develop the State as a whole. To provide a means of transportation to an entire State means the construction of a connected system, and not the construction of a few



miles of hard-surface road here and there. There are localities that require a hard-surface road immediately—this should be constructed—but other localities can carry on their development by a cheaper road—this should be provided. Distances between these roads should be satisfactorily maintained or constructed so the system would be continuous and permit the State to develop as a whole.

The duty of a State Highway Commission is not only to construct a system of highways but to provide by the building of a suitable system of roads, a means of economic transportation.

Providing a means of transportation does not mean the construction of any particular kind of road nor does it mean the construction of expensive roads if less expensive roads will do. It does mean, however, furnishing to the State's traffic a system of highways that for a reasonable cost of maintenance can adequately, efficiently, and economically carry the traffic using the road. If a road is subjected to light traffic it would be money very unwisely spent to build a heavy duty or expensive road just as it would be money wasted to build a too lightly constructed road for heavy traffic.

In making plans for a State system it is absolutely necessary to know what suitable road building materials are locally available and can be used in the construction of the road. Many times road building materials have been transported long distances for the purpose of building a particular kind of road when local materials were available for the construction of another type that would have satisfactorily carried the traffic. The kind and intensity of traffic that is expected on the road must also be taken into consideration when selecting the types and design of the road.

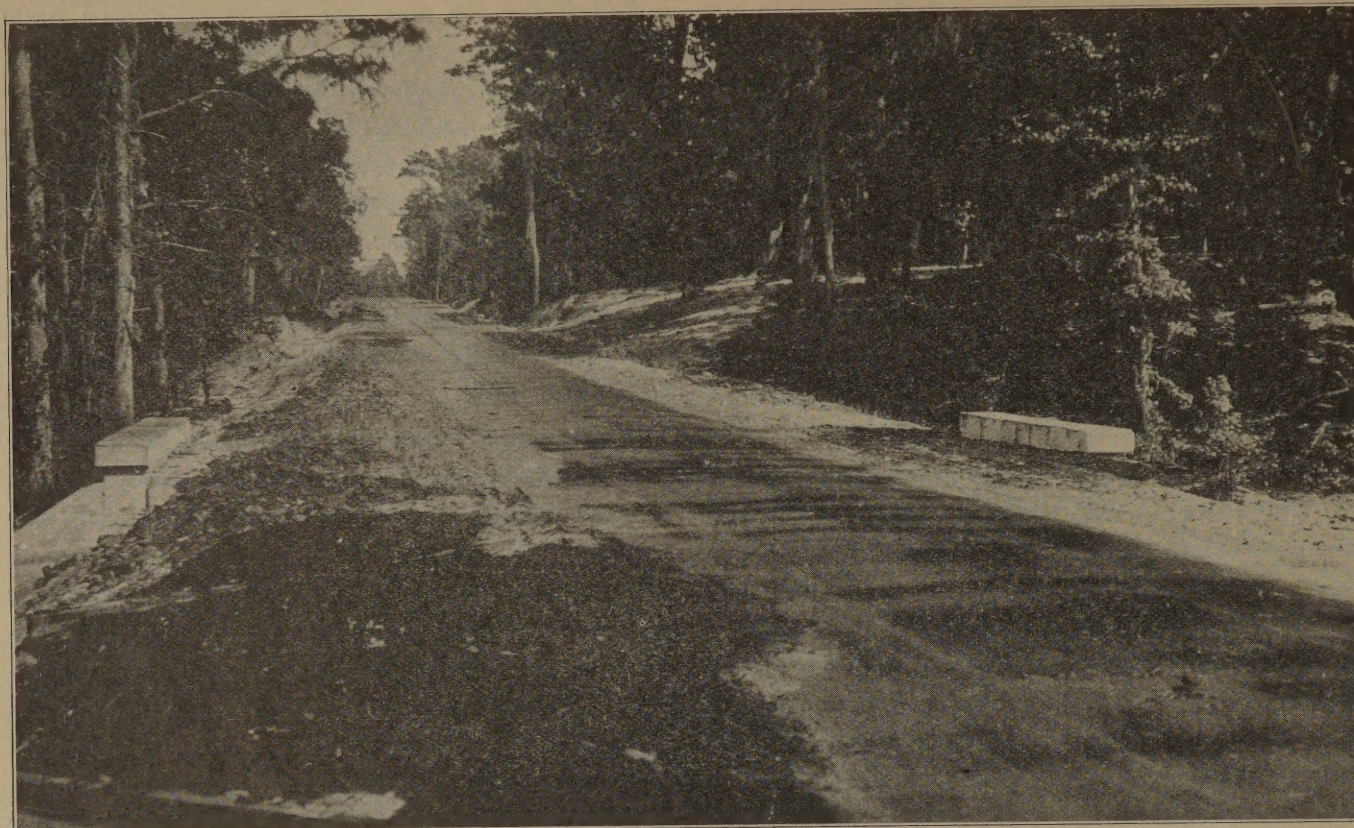
The location of industrial centers and future development must be considered in type selection and road location. The general character and topography of sections of the State must be considered. All these things must be taken into consideration when laying out and constructing a State system of highways.

The location and construction of a highway system is important to the extent of efficient operation in transportation and economic maintenance of the system. The value of a State system does not lie in the construction of a system does not lie in the construction of a system of hard-surface roads, but in affording traffic a means of transportation at a minimum expense. Many maintenance cost comparisons have been made on a mile-year basis; this is somewhat erroneous, and more recent studies in maintenance have been made on a ton-mile basis; probably it would be nearer correct to make the comparison on the ton-mile basis, taking into consideration the value of the commodity transported.

And it may be seen that the function of a State system of highways is to afford a means of efficient transportation at the lowest cost. It does not mean the construction of hard-surface roads alone, but it does mean the systematized construction and maintenance of a means of transportation. This may mean merely the grading of an earth road, or it may mean the construction of sand-clay, topsoil or gravel roads or still it may mean the construction of a hard-surface road; the choice of type and design depending on the demand and purpose of the road.

If a bond issue is spent for construction, it is necessary to know that the bond money is spent in such a way that the road improvement will outlast the bond. This may be done in all cases if the progressive type methods are adopted. The progressive type road is one that utilizes all previous construction of the road in the next successive step, the final being the construction of a hard-surface. The steps usually consist of the grading and completion of drainage structures, the surfacing with selected soil such as sand-clay or gravel, which is oftentimes maintained as a "subgrade highway" and later used as a stabilized subgrade for a hard-surface pavement. The spending of bond money in the construction of steps in progressive type roads is sound, and many times goes a long way in economically solving the road problem of a locality or State. Generally the cost of grading and constructing a selected soil road is about the cost of a hard-surface road. This means, that if one-sixth of the cost of a hard-surface road. This means, that if instead of a hard-surface road, a selected soil road will, with reasonable maintenance, carry the traffic and six times the mileage of road may be constructed for the same money, in much quicker time, and the State has the advantage of developing at six points instead of one. When, by the use of this type of road the country has developed and the demands of traffic are such as to create heavy maintenance cost, and the traffic demands a heavier road, then this selected soil road may be used as a subgrade and a hard-surface road construction. This method of designing a State Highway System gives the heavy duty hard-surface roads for the heavy traffic and the lightly constructed roads for the lighter traffic, and by thus obtaining a large mileage of roads the entire system may be connected and the entire State developed at the same time as a whole, rather than confining the development of the State to the vicinities of a shorter mileage of hard-surface roads, and so it may be seen that the development of a State depends on the efficiency and economy of transportation, which in turn depends on the selection of type, design, construction and maintenance of a continuous system of highways.





STRETCH OF SAND ASPHALT ROAD IN PENDER COUNTY

## History of Highway Legislation in North Carolina

*(Continued from page 5)*

the Senate with scarcely a dissenting vote and with practically no argument against it is indicative of the progressive spirit of the people of North Carolina and is a distinct compliment to the State Highway Commission. Some will say that the tax of three cents per gallon on gasoline is unjust, but is it? In the first place the motorist is the one who uses the roads and thereby shortens their period of existence to a degree corresponding with the type of vehicle and the load, so why should he not bear the major portion of the expense of the upkeep? But in the end figures prove that the cost of operating a car or truck over an improved road with gas a few cents more per gallon is less than to operate the same car over a road that is not properly maintained. A comparison of figures covering gasoline shipments into North Carolina for 1920 and 1922 will prove this. In 1920 there were shipped into the State 73,997,832 gallons of gasoline and the same year there were 142,284 automobiles in the State, or, roughly speaking, each car used 520 gallons during the year, which at a cost of 25c per gallon, cost each motorist \$130. Compare these figures with those of 1922, when 86,125,368 gallons were shipped into the State and used by 181,955 motorists, an average per car of 463 gallons, costing \$115.75. This represents a net saving in gasoline alone, not to mention the saving in oil, tires, car depreciation,

etc., of 57 gallons of gas or \$14.25 during the year, or a total saving to the entire motoring fraternity of the State of \$2,592,858.75—and this saving in spite of the fact that there was a tax of 1c per gallon. The beginning of this saving may be traced back to the beginning of an efficient maintenance system in North Carolina, when maintenance was placed under State control.

In summing up the history of highway legislation in North Carolina there are several points that would be well to consider when drafting proposed highway legislation. The first of these is that politics and State highway work must be absolute strangers, a practice which has been followed in North Carolina and which has resulted in a wonderfully successful administration. Secondly, funds must be provided so that an efficient organization may be secured and to afford sufficient resources to attract the larger contractors. In other words, a sound financial backing must be provided for a State highway program just as in any well organized business. The third point, and perhaps the most important, is that county lines must be absolutely ignored, both in construction and maintenance and more particularly in the latter. The experience of practically every State in the Union has been that maintenance under county units is a failure. Place the responsibility for maintenance on the State organization, provide funds, and demand results.



# North Carolina State Road Law

[PUBLIC LAWS, SESSION 1921, AS AMENDED BY SESSION 1923]

An act to provide for the construction and maintenance of a State System of Hard-surfaced and other dependable roads connecting by the most practicable routes the various county-seats and other principal towns of every county in the State for the development of agriculture, commercial and industrial interests of the State, and to secure benefits of Federal Aid therefor, and for other purposes.

*The General Assembly of North Carolina do enact:*

Section 1. That chapter one hundred and eighty-nine of the Public Laws of North Carolina, session one thousand nine hundred and nineteen, be amended so as to hereafter read as follows:

## GENERAL PURPOSES OF THE ACT

Sec. 2. The general purposes of this act are for the State to lay out, take over, establish and construct, and assume control of approximately 5,500 miles of hard-surfaced and other dependable highways running to all county-seats, and to all principal towns, State parks, and principal State institutions, and linking up with State highways of adjoining States and with National highways into National Forest Reserves by the most practicable routes, with special view of development of agriculture, commercial, and natural resources of the State, and for the further purpose of permitting the State to assume control of the State highways, repair, construct, and reconstruct and maintain said highways at the expense of the entire State, and to relieve the counties and cities and towns of the State of this burden.

## PURPOSE AND INTENT OF ACT—HARD-SURFACED ROADS AND MAINTAINING SAME

Sec. 3. That the purpose and intent of this act is to establish a system of State highways for the State, hard-surfacing said highways as rapidly as possible, and maintaining the entire system of said highways in the most approved manner as outlined in this act. Work on the various links of the State highway system shall be of such a character as will lead to ultimate hard-surfaced construction as rapidly as money, labor, and materials will permit, and to a State system of durable hard-surfaced, all-weather roads, connecting the various county-seats, principal towns, and cities.

## ESTABLISHMENT OF THE COMMISSION

Sec. 4. That a State Highway Commission is hereby created, to consist of a chairman from the State at large, who shall be a practical business man, and who shall be known as the State Highway Commissioner; and nine (9) commissioners, one from each construction district as hereinafter designated, three of whom shall be of the minority political party, one for each of the three terms, all to be appointed by the Governor, such appointments to be confirmed by the Senate. The State Highway Commissioner of the existing Highway Commission and all other commissioners whose terms do not expire on April first, one thousand nine hundred and twenty-one, shall hold office during their present unexpired terms. At the expiration of the present term of the chairman, and any commissioner whose term has not expired, his successor shall be appointed by the Governor for a period of six years, such appointment to be confirmed by the Senate. That two of said commissioners shall be appointed for two years from April first, one thousand nine hundred and twenty-one; three of said commissioners shall be appointed for four years from April first, one thousand nine hundred and twenty-one; three of said commissioners shall be appointed for six years each, such appointments to be confirmed by the Senate: *Provided*, that any commissioner appointed or elected under this act may be removed by the Governor for cause. In case of the death, resignation, or removal from his district, of any commissioner during his term of office, his successor shall be appointed by the Governor, from the same construction district and from the same political

party in which the vacancy occurs, to fill out his unexpired term, such appointment to be confirmed by the next Senate. At the expiration of the term of the chairman, and the various commissioners, their successors shall be appointed by the Governor for a term of six years each, such appointments to be confirmed by the Senate. The State Highway Commissioner shall devote his entire time and attention to the work of the commission and receive as compensation and salary therefor fifty-five hundred dollars (\$5500) per annum, payable monthly, and his actual traveling expenses when engaged in the discharge of his duties. Said State Highway Commissioner shall be vested with all the authority of said commission when same is not in session. The members of the State Highway Commission, other than the chairman of the commission, shall each receive ten dollars (\$10) per day while engaged in the discharge of the duties of their office, and their actual traveling expenses. The headquarters and main office of the State Highway Commission shall be located at the State Capitol. The members of the said commission, at their first meeting, shall organize and adopt a common seal; they shall keep minutes of their meetings, which shall be open to public inspection; they shall have the power to adopt and enforce rules and regulations for the government of their meetings and proceedings, and for the transaction of the business of the commission; and shall have the power and authority to make all rules and regulations for carrying out the true intent and purposes of this act. They shall meet at the offices of the commission at such regular times, not less than quarterly, as they may by rule provide, and may hold special meetings at any time and place at the call of the chairman or any five members. The first meeting of the commission shall be at the call of the Governor as soon as practicable after the ratification of this act.

## STATE HIGHWAY ENGINEER AND OTHER EMPLOYEES

Sec. 5. The said commission, at its first meeting, or as soon thereafter as practicable, shall employ a State Highway Engineer, who shall be a competent civil engineer, qualified by technical training as well as practical construction experience in highway work. The engineer shall hold office during the pleasure of the commission, but not to exceed a period of four years without reappointment. He shall receive an annual salary to be fixed by the State Highway Commission, approved by the Governor, payable in monthly installments, together with such actual and other necessary expenses as may be incurred in the official discharge of his duties. Said commission shall prescribe and fix the duties of the engineer, and shall provide the engineer with offices and sufficient equipment to discharge his duties as prescribed by the State Highway Commission and this act. The commission shall employ such other engineers, clerks, and assistants as may be needed, and at such salaries and for such terms as appear necessary, and prescribe and fix their duties. In the discretion of the commission, such offices may be established in the construction districts as may be necessary to carry out the provisions of this act.

## OATH AND BONDS OF COMMISSIONERS AND ENGINEERS

Sec. 6. The members of the State Highway Commission and State Highway Engineer shall each, before entering upon the discharge of his duties, take an oath that he will faithfully and honestly execute the duties of the office during his continuance in office, and each give a bond, to be fixed and approved by the Governor, conditioned upon the faithful discharge of the duties of his office and the full and proper accounting for all public funds and property coming into his possession or under his control. The premium on such bond or bonds shall be paid out of the State Highway Fund.

## FIVE THOUSAND FIVE HUNDRED MILES (APPROXIMATELY) TAKEN OVER FOR THE STATE HIGHWAY SYSTEM—METHOD

Sec. 7. Fifty-five hundred (5500) miles shall be the approximate maximum limit of mileage of the State highway system. The designation of all roads comprising the State Highway system as proposed by the State Highway Commission shall be mapped, and there shall be publicly posted at the courthouse door in every county in the State a map of all the roads in such county in the State system, and the board



of county commissioners or county road-governing body of each county, or street-governing body of each city or town in the State shall be notified of the routes that are to be selected and made a part of the State system of highways; and if no objection or protest is made by the board of county commissioners or county road-governing body of any county, or street-governing body of any city or town in the State within sixty days after the notification before mentioned, then and in that case the said roads or streets, to which no objections are made, shall be and constitute links or parts of the State highway system. If any objections are made by the board of county commissioners or county road-governing body of any county or street-governing body of any city or town, the whole matter shall be heard and determined by the State Highway Commission in session, under such rules and regulations as may be laid down by the State Highway Commission, notice of the time and place of hearing to be given by the State Highway Commission at the courthouse door in the county, and in some newspaper published in the county, at least ten days prior to the hearing, and the decision of the State Highway Commission shall be final. A map showing the proposed roads to compose the State highway system is hereto attached to this bill and made a part hereof. The roads so shown can be changed, altered, added to or discontinued by the State Highway Commission: *Provided*, no roads shall be changed, altered or discontinued so as to disconnect county-seats, principal towns, State or National parks or forest reserves, principal State institutions, and highway systems of other States. The rights of way to all roads taken over under this act shall be not less than thirty (30) feet: *Provided*, that no toll road shall be taken over under this section unless by agreement or condemnation as herein provided.

#### COMMISSION ASSUMING CONTROL

Sec. 8. Within sixty days after the ratification of this act, the State Highway Commission shall commence to assume control of the various links of road constituting the State highway system, and shall complete the assumption of control of all the roads which constitute the State highway system as rapidly as practicable.

Sec. 9. (a) After the selection of a part or parts of the State highway system, except that the numbers thereon shall comprising such system, including connecting streets in incorporated towns and cities, to be distinctly marked with some standard design, placed on convenient objects along such routes. Such design shall be uniform on all parts of the State highway system, except that the numbers thereon shall correspond with the numbers given the various routes by the commission, which numbers shall coincide with the numbers placed on the official map or maps issued by the commission. No similar design shall be used for marking other routes in North Carolina.

#### GUIDE AND WARNING SIGNS

(b) After selection of State highways before mentioned, the commission may cause to be erected such standard guide or warning signs as it may deem necessary along the State highway system. Such signs shall be of uniform design throughout the State, and it shall be unlawful for any person to erect or display any other guide or warning signs upon said highway except in case of emergency, or with the approval of the commission, and, if erected without such approval, they may be removed by the commission, and any violator of this section shall be subject to all penalties hereinafter provided.

#### DIRECTING SIGNS

(c) After taking over section or sections of the State highway system, the commission may erect proper and uniform signs directing persons to roads and places of importance.

(d) Said commission shall have the power to control all signs within the right of way of State highways.

#### POWERS OF STATE HIGHWAY COMMISSION

Sec. 10. The said State Highway Commission shall be vested with the following powers:

(a) The general supervision over all matters relating to the construction of the State highways, letting of contracts therefor, and the selection of materials to be used in the construction of State highways under the authority of this act.

(b) To take over and assume exclusive control, for the benefit of the State, of any existing county or township roads, and to locate and acquire rights of way for any new roads

that may be necessary for a State highway system, with full power to widen, relocate, change or alter the grade or location thereof; to change or relocate any existing roads that the State Highway Commission may now own or may acquire; to acquire by gift, purchase, or otherwise, any road or highway, or tract of land or other property whatsoever, that may be necessary for a State highway system; *Provided*, that nothing in this act shall be construed to authorize or permit the Highway Commission to allow or pay anything to any county, township, city or town, or to any board of commissioners or governing body thereof, for any existing road or part of any road heretofore constructed by any such county, township, city or town, unless contract has already been entered into with the State Highway Commission.

(c) To provide for such road materials as may be necessary to carry on the work of the State Highway Commission, either by gift, purchase, or condemnation.

(d) To enforce by mandamus or other proper legal remedies all legal rights or causes of action of the State Highway Commission with other public bodies, corporations, or persons.

(e) To make rules, regulations and ordinances for the use of, and the police traffic on, the State highways, and to prevent their abuse by individuals, corporations and public corporations, by trucks, tractors, trailers or other heavy or destructive vehicles or machinery, or by any other means whatsoever, and to provide ample means for the enforcement of same, and the violations of any of the rules, regulations or ordinances so prescribed by the State Highway Commission shall constitute a misdemeanor: *Provided*, no rules, regulations or ordinances shall be made that will conflict with any statute now in force or any ordinance of incorporated cities or towns.

(f) To establish a traffic census to secure information about the relative use, cost, value, importance, and necessity of roads forming a part of the State highway system, which information shall be a part of the public records of the State, and upon which information the State Highway Commission shall, after due deliberation and in accordance with these established facts, proceed to order the construction of the particular highway or highways.

(g) To assume full and exclusive responsibility for the maintenance of all roads other than streets in towns and cities, forming a part of the State highway system, from date of acquiring said roads: *Provided*, the commission may enter into contracts with counties as to the maintenance of highways which shall form a part of the State highway system. The State Highway Commission shall have authority to maintain all streets constructed by the State Highway Commission in towns of less than three thousand population by the last census, and such other streets as may be constructed in towns and cities at the expense of the State Highway Commission, whenever, in the opinion of the State Highway Commission, it is necessary and proper so to do.

(h) To give suitable names to State highways and change the names of any highways that shall become a part of the State system of highways.

(i) To co-operate with municipal or county authorities, civic bodies and individuals in the proper selection, planting and protection of roadside trees, shrubs and vines, for the beautification and protection of said highways.

(j) To make proper and reasonable rules, regulations and ordinances for the placing or erection of telephone, telegraph, or other poles, sign boards, fences, gas, water, sewerage, oil, or the pipe lines, and other similar obstructions that may, in the opinion of the said Highway Commission, contribute to the hazard upon any of the said highways or in any wise interfere with the same, and to make reasonable rules and regulations for the proper control thereof. And whenever the order of the said Highway Commission shall require the removal of, or changes in, the location of telephone, telegraph, or other poles, sign boards, fences, gas, water, sewerage, oil, or other pipe lines, or other similar obstructions, the owners thereof shall, at their own expense, move or change the same to conform to the order of the said Highway Commission. Any violation of such rules and regulations or non-compliance with such orders, shall constitute a misdemeanor.

(k) To regulate, abandon and close to use, grade crossings on any road designated as part of the State highway system, and whenever a public highway has been designated as part of the State highway system and the State Highway Commission, in order to avoid a grade crossing or crossings with a railroad or railroads, the commission shall have power to let a railroad or railroads, continues or constructs the said road on



one side of the railroad or railroads, the commission shall have power to abandon and close to use such grade crossings; and whenever an underpass or overhead bridge is substituted for a grade crossing, the commission shall have power to close to use and abandon such grade crossing and any other crossings adjacent thereto.

#### FEDERAL AID

(1) That the said State Highway Commission shall have such powers as are necessary to comply fully with the provisions of the present or future Federal Aid Acts. The said commission is hereby authorized to enter into all contracts and agreements with the United States Government relating to the survey, construction, improvement and maintenance of roads under the provisions of the present or future Congressional enactments, to submit such scheme or program of construction or improvement and maintenance, as may be required by the Secretary of Agriculture or otherwise provided by Federal Acts, and to do all other things necessary to carry out fully the co-operation contemplated and provided for by present or future acts of Congress, for the construction or improvement and maintenance of rural post roads. The good faith and credit of the State are further hereby pledged to make available funds necessary to meet the requirements of the acts of Congress, present or future, appropriating money to construct and improve rural post roads and apportioned to this State during each of the years for which Federal funds are now or may hereafter be apportioned by the said act or acts, to maintain the roads constructed or improved with the aid of funds so appropriated and to make adequate provisions for carrying out such construction and maintenance. The good faith and credit of the State are further pledged to maintain such roads now built with Federal aid and hereafter to be built, and to make adequate provisions for carrying out such maintenance.

Sec. 11. It shall be mandatory upon the State Highway Commission, its officers and employees, or any contractor or subcontractor employed by the said commission, to select, lay out, maintain and keep in as good repair as possible, suitable detours by the most practical route, while said highways or roads are being improved or constructed, and it shall be mandatory upon the said Highway Commission, and its employees or contractors, to place, or cause to be placed, explicit directions to the traveling public during repair of said highway or road under the process of construction. All expense of laying out and maintaining said detours shall be paid out of State Highway Fund.

#### CLOSING OF STATE HIGHWAYS DURING CONSTRUCTION, INJURY TO BARRIERS, WARNING SIGNS, ETC.

Sec. 12. If it shall appear necessary to the State Highway Commission, its officers, or appropriate employees, to close any road or highway coming under its jurisdiction so as to permit of proper completion of work which is being performed, such commission, its officers or employees, may close, or cause to be closed, the whole or any portion of such road or highway deemed necessary to be excluded from public travel. While any such road or highway, or portion thereof, is so closed, or while any such road or highway, or portion thereof, in process of construction or maintenance, such commission, its officers, or appropriate employees, or its contractor, under authority from such commission, may erect, or cause to be erected, suitable barriers or obstructions thereon, may post, or cause to be posted, conspicuous notices to the effect that the road or highway or portion thereof, is closed, warning signs, lights and lanterns on such road or highway, or portions thereof. When such road or highway is closed to the public or in process of construction or maintenance, as provided herein, any person who willfully breaks down, drives into new construction work, removes, injures or destroys any such barrier or barriers or obstructions on road being constructed, or tears down, removes or destroys any such notices, drives into new construction work, or extinguishes, removes, injures or destroys any such warning lights or lanterns so erected, posted or placed, shall be guilty of a misdemeanor.

#### REGULATING OPENINGS, STRUCTURES, PIPES, TREES, ETC., ON THE STATE HIGHWAYS, AND THE ISSUANCE OF PERMITS

Sec. 13. No opening or other interference whatsoever shall be made in any State road or highway other than streets in cities and towns, nor shall any structure be placed thereon, nor shall any structure which has been placed thereon be changed or removed, except in accordance with a written permit from the State Highway Commission or its duly author-

ized officers, who shall exercise complete and permanent control over such roads and highways. No State road or State highway, other than streets in cities and town, shall be dug up for laying or placing pipes, conduits, sewers, wires, railways, or the objects, and no tree or shrub in or on any State road or State highway shall be planted, trimmed, or removed, and no obstruction placed thereon, without a written permit as hereinbefore provided for, and then only in accordance with the regulations of said Highway Commission or its duly authorized officers or employees; and the work shall be under the supervision and to the satisfaction of the State Highway Commission or its officers or employees, and the entire expense of replacing the highway in as good condition as before shall be paid by the persons, firms or corporations to whom the permit is given, or by whom the work is done; the State Highway Commission, or its duly authorized officers, may, in its discretion, before granting a permit under the provisions of this act, require the applicant to file a satisfactory bond, payable to the State of North Carolina, in such an amount as may be deemed sufficient by the State Highway Commission, or its duly authorized officers, conditioned upon the proper compliance with the requirements of this act by the person, firm, or corporation granted such permit. Any person making any opening in a State road or State highway, or placing any structure thereon or changing or removing any structure thereon without obtaining a written permit as herein provided, or not in compliance with the terms of such permit, or otherwise violating the provisions of this act, shall be guilty of a misdemeanor: *Provided*, this section shall not apply to railroad crossings. The railroads shall keep up said crossings as now provided by law.

#### TO ENCOURAGE COUNTY ROAD BUILDING

Sec. 14. To encourage counties to build hard-surfaced or other dependable roads constituting a part of the State highway system before same can be constructed by the State Highway Commission, the said commission is hereby authorized and empowered to enter into contracts and agreements with said county or counties for fair reimbursement for said expense: *Provided*, said road or bridge is built in accordance with the specifications and under the direction of the State Highway Commission.

Sec. 15. That all contracts over one thousand dollars that the commission may let for construction, or any other kinds of work necessary to carry out the provisions of this act, shall be let, after public advertising, under rules and regulations to be made and published by the State Highway Commission, to a responsible bidder, the right to reject any and all bids being reserved to the State Highway Commission.

Whenever any contractor engaged in working upon the State highway, and under contract with the State Highway Commission, shall incur liability for labor, material or other cause, and for which such contractor, or his bondsmen, may be liable, all such claims shall be presented in writing to said commission within six months after the completion of said work, and failure to file such claim within said time shall be a complete bar against recovery from said commission or any bondsmen: *Provided*, that this section shall not be in force and effect until six months from the ratification of this act.

Sec. 16. That when any portion of the State highway system shall run through any city or town and it shall be found necessary to connect the State highway system with improved streets of such city or town as may be designated as part of such system, the State Highway Commission shall build such connecting links, the same to be uniform in dimensions and materials with such State highways: *Provided*, however, that whenever any city or town may desire to widen its streets, which may be traversed by the State highway, the State Highway Commission may make such arrangements with said city or town in connection with the construction of said road, as, in its discretion, may seem wise and just under all the facts and circumstances in connection therewith: *Provided further*, that such city or town shall save the State Highway Commission harmless from any claims for damage arising from the construction of said road through such city or town and including claims for rights of way, change of grade line, and interference with public service structures. And the State Highway Commission may require such city or town to cause to be laid all water, sewer, gas or other nine lines or conduits, together with all necessary house or lot connections or sewers, to the curb line of such road or street to be constructed: *Provided further*, that whenever, by agreement with the road-governing body of any city or



town, any street designated as a part of the State highway system, shall be surfaced by order of the State Highway Commission, at the expense, in whole or in part, of a city or town, it shall be lawful for the governing body of such city or town to declare an assessment district as to the street to be improved, without petition by the owners of property abutting thereon, and the costs thereof, exclusive of so much of the cost as incurred at street intersections and the share of railroads or street railways whose tracks are laid in said street, which shall be assessed, under their franchises, shall be specially assessed upon the lots or parcels of land abutting directly on the improvements, according to the extent of their respective frontage thereon by an equal rate per foot of such frontage.

#### WORKING OF STATE CONVICTS

Sec. 17. That all able-bodied male convicts sentenced to the State Prison may be assigned to work upon the State highway system under the direction of the State Highway Commission. That the cost or hire of the able-bodied male convicts to the State Highway Commission shall be agreed upon between the State Highway Commission and the Governor and chairman of the Prison Board, on the basis of paying the actual expenses in working said convicts, including food, clothing, housing, guarding, transportation and incidental expenses by the State Highway Commission to the State Prison Board.

#### WORKING OF COUNTY CONVICTS

Sec. 18. That the State Highway Commission may make contracts and agreements with the board of county commissioners or road-governing bodies of any county in the State for the purpose of hiring any county convicts to be worked on the State Highway system or in the production of materials for use in constructing State highways, and for constructing State highways.

#### GRADE CROSSINGS ELIMINATED

Sec. 19. Whenever any railroad and a State highway or street which is a link in or a part of the State highway system shall cross each other at the same level, and, if, after due notice to the railroad and a hearing, in the judgment of the State Highway Commission, such crossing is dangerous to public safety, or the public travel on such highway is unreasonably impeded thereby, the State Highway Commission may order the person or company operating such railroad within such time as the State Highway Commission may fix, to alter such crossing according to the plans to be approved by said commission, by substituting therefor a crossing, not at the grade of such public highway, either by carrying such public highway under or over the tracks of such railroad. If, however, in the judgment of the State Highway Commission, the safety of travelers may be secured by the erection of gates, alarm signals, or other approved safety devices, then said commission may require the railroad or railroads to construct and maintain such safety devices in lieu of the overpass or the underpass.

The work shall be done and material furnished either by the railroad or the State Highway Commission as may be agreed upon, and, in case of an underpass, the railroad shall be responsible for one-half of the expense of all excavations through the existing railroad fill as well as one-half of the complete cost of the structure, including both the foundation and superstructure; and, in case of an overpass, the railroad shall be responsible for one-half of the entire cost of the bridge which will stand the opening over the tracks of the railroad from abutment to abutment, and including such abutments, and if the grade crossing is not eliminated by an underpass or overpass, the railroad company shall be responsible for one-half of the cost of installing gates, alarm signals, or other approved safety devices. If the work is done and material furnished by the railroad, an itemized statement of the total amount expended therefor shall, at the completion of the work, be furnished the State Highway Commission, and the commission shall pay such amount to the railroad as may be shown on said statement after deducting the amount for which the railroad is responsible; and if the work is done by the State Highway Commission, an itemized statement of the total amount expended shall be furnished the railroad and the railroad shall pay to the State Highway Commission such part thereof as the railroad may be responsible for as herein provided, such payment by the railroad shall be under such rules and regulations and by such method as the State Highway Commission may provide.

Whenever in the judgment of the State Highway Commission a grade crossing shall be abolished by the construction

either of an underpass or an overpass, or the erection of safety devices, if the work is to be done by the railroad, or railroads, as herein provided, the said commission shall give the railroad, or railroads, notice of its determination in this regard, and direct it or them to commence work upon such underpass or overpass, or device, within a period to be fixed in such notice, and if such work is not commenced in the period specified in the notice, the State Highway Commission is authorized and empowered to carry such highway under or over the tracks of said railroad, or to provide gates, alarm signals, or other approved safety devices, rendering to the railroad, or railroads, an itemized account of the cost thereof, and, at the completion of the work, shall have valid cause of action against such railroad, or railroads, for the proportionate part thereof due by the railroad as above provided: *Provided*, that the payment by such railroad of said proportionate part may be made under such rules and regulations and by such method as the State Highway Commission may provide. If the State Highway Commission shall undertake to do the work, it shall not obstruct or impair the operation of the railroad and shall keep the roadbed and tracks safe for the operation of trains at every stage of the work.

(a) The jurisdiction over and control of grade crossings and safety devices upon the State highway system herein given the State Highway Commission shall be exclusive.

(b) From all decisions or determinations made by the State Highway Commission, any party affected thereby shall be entitled to an appeal, and the procedure for such an appeal shall be the same as provided in chapter twenty-one, Consolidated Statutes, for appeals from decisions and determinations of the Corporation Commission.

#### MAINTENANCE, UPKEEP, AND CONTROL

Sec. 20. In assuming control of the roads constituting the State highway system, the commission shall assume as soon as practicable the maintenance and upkeep of said roads, and shall as soon as practicable organize a proper and sufficient patrol force to keep said roads in good condition. In the event of failure to maintain said roads in good condition, upon complaint of the board of county commissioners, or road-governing body of any county, the State Highway Commission shall at once investigate such complaint, and if the same be well founded, then it shall at once order the repair and maintenance of the road complained of, and investigate the neglect of the person in charge of the road so complained of, and if, upon investigation, the person or persons in charge of the road complained of be at fault, he may promptly be discharged from the service of the commission.

#### EMPLOYMENT OF COUNSEL

Sec. 21. The State Highway Commission may, in its discretion, employ any attorney or attorneys to advise them for the purpose of condemning land acquired by this act, making any contracts, and do other legal work that the commission may believe necessary for carrying out this act, and compensation for all such services shall be paid out of the State Highway Fund.

Sec. 22. The State Highway Commission is vested with the power to acquire such rights of way and title to such land, gravel, gravel beds or bars, sand beds or bars, rock, stone, boulders, quarries, or quarry beds, lime, or other earth or mineral deposits or formations, and such standing timber as it may deem necessary and suitable for road construction, maintenance, and repair, and the necessary approaches and ways through, and a sufficient amount of land surrounding and adjacent thereto, as it may determine to enable it to properly prosecute the work, either by purchase, donation, or condemnation, in the manner hereinafter set out: *Provided*, that the right of condemnation provided for in this act shall not apply to gravel beds or bars, sand beds or bars, rock, stone, boulders, quarries, or quarry beds, lime, or other earth, or mineral deposits or formations, in actual, bona fide operation for commercial purposes by private enterprise. The State Highway Commission is also vested with the power to acquire such additional land alongside of the rights of way or roads as, in its opinion, may be necessary and proper for the protection of the roads and roadways, and such additional area as may be necessary, as by it determined, for approaches to and from such material and other requisite area as may be desired by it for working purposes.

Whenever the State Highway Commission and the owner or owners of the lands, materials, and timber required by the State Highway Commission to carry on the work as



herein provided for, are unable to agree as to the price thereof, the State Highway Commission is hereby vested with the power to condemn the lands, materials, and timber, and in so doing, the ways, means, methods, and procedure of chapter thirty-three of the Consolidated Statutes of North Carolina, entitled "Eminent Domain," shall be used by it as near as the same is suitable for the purposes of this act. And in all instances the general and special benefits shall be assessed as offsets against the damages: *Provided*, that all actions for damages for rights of way or other causes, shall be commenced within six months from the completion of each particular project.

In case condemnation shall become necessary the State Highway Commission is authorized to enter the lands and take possession of the same, and also take possession of such materials and timber as is required by it prior to bringing the proceeding for condemnation, and prior to the payment of the money for the said property.

In the event the owner or owners shall appeal from the report of the commissioners, it shall not be necessary for the State Highway Commission to deposit the money assessed with the clerk, but it may proceed and use the property to be condemned until the final determination of the action.

#### REPORTS TO THE STATE

Sec. 23. The Highway Commission shall, on or before the tenth day of the convening of each regular session of the General Assembly of North Carolina, make full, printed, detailed report to the General Assembly, showing the construction and maintenance work and the cost of the same, receipts of license fees, and disbursements of the commission, and such other data as may be of interest in connection with the work of the Highway Commission. A full account of each road project shall be kept by and under the direction of the Highway Commission or its representatives, to ascertain at any time the expenditures and the liabilities against all projects; also records of contracts and force account work. The account records, together with all supporting documents, shall be open at all times to the inspection of the Governor or road authorities of any county, or their authorized representatives, and copies thereof shall be furnished such officials upon request.

Sec. 24. That the books and accounts of the Highway Commission shall be audited at least once a year by a certified public accountant to be designated by the Auditor of the State, and report of certified accountant shall be made a part of the accompanying report of the State Highway Commission to the General Assembly as herein provided.

#### CONSTRUCTION DISTRICTS

Sec. 25. That with the special view of an equitable distribution of the construction funds throughout all portions of the State, the State shall be divided into nine (9) construction districts, the same being designated and indicated on the map hereto attached to this act, and work in each of the construction districts shall be started as simultaneously as practicable and continued so in each district. The commission may change, re-form and re-locate the lines of said construction districts.

#### APPORTIONMENT OF FUNDS TO CONSTRUCTION DISTRICTS

Sec. 26. The State Highway Commission shall apportion among the various construction districts as nearly as possible an equal amount of the construction fund on the basis of one-third in the ratio of area of each district to the entire area of the State, one-third in the ratio of population of the districts, as determined by the last United States census, to the entire population of the State, and one-third in the ratio of the State highway mileage of the district in proportion to the total mileage of State highways.

Sec. 27. That for the purpose of carrying out the provisions of this act and provide for the maintenance and construction of the highways contemplated under this act from the funds derived from the various taxes levied under this act, there shall first be set aside the sum of two hundred and fifty thousand dollars (\$250,000) annually, or so much thereof as may be necessary to defray the expenses of the State Highway Commission. From the remainder of said taxes there shall then be set aside annually the following in order named: (a) a sum sufficient to pay the interest upon the first fifty million dollars bonds issued under this act; (b) a sum sufficient to pay the interest upon any bonds issued under this act in excess of fifty million dollars, and (c) any interest or sinking fund payments now or hereafter directed to be made

therefrom by the General Assembly. The remainder of such fund shall be used by the Highway Commission in the maintenance of the highways taken over under the provision of this act, and to be adopted and designated by the commission as State highways under the provisions of this act; any part of the two hundred and fifty thousand dollars (\$250,000) set apart for the expenses of the commission, and any part of the balance unexpended in the payment of interest on the bonds, shall pass each year under the control of the Highway Commission and be used by it in the maintenance and construction of the State system of highways herein provided for. All funds derived from the taxes herein levied, or from the sale of the bonds herein provided for, may be used by the commission in meeting the requirements of the United States Government as to Federal aid: *Provided*, that all necessary expenses of collecting the said license or registration fees or other State highway funds hereinafter provided for, including clerical assistance, the cost of furnishing number plates and mailing same, and for such blanks, books, and other supplies as cannot be furnished by the State Printer, shall be paid for monthly by the Auditor from the revenue derived from fees or taxes that are collected, said expenses shall be approved by the Governor and Council of State, and shall not in the aggregate exceed ten per cent. of the total amount collected by the Secretary of State under this act.

#### REGISTRATION, LICENSING, AND PERMIT FEES

Sec. 28. That the fees for the registration and licensing of vehicles as herein required shall be according to the following schedules:

##### RATES FOR AUTOMOBILES

24 h. p. or less.....	\$12.50 per year
Over 24 h. p., and not more than 30 h. p. ....	20.00 per year
More than 30 h. p., and less than 35 h. p. ....	30.00 per year
35 h. p. or more.....	40.00 per year

Motor vehicles used for the transportation of passengers for hire shall pay fifty per cent. more than the above rates.

Horsepower shall be computed according to the N. A. C. C. formula of rating for all motor vehicles equipped with internal combustion engines. On motor vehicles operated by steam or electricity the horsepower rating shall be computed according to the rating by the manufacturer of such vehicle.

##### RATES FOR MOTOR TRUCKS

Trucks with carrying capacity less than 1,000 pounds \$	12.50
1,000 pounds and under one ton.....	15.00
One ton and under two tons.....	25.00
Two tons and under three tons.....	75.00
Three tons and under four tons.....	200.00
Four tons and over.....	300.00
On all trailers, \$15 per ton carrying capacity.	

##### MOTORCYCLES

\$5 on each motorcycle, and \$5 for each motorcycle side-car.

##### DEALERS IN MOTOR VEHICLES

Registration fee and first five plates.....	\$25.00
Each additional plate.....	1.00

The fiscal year for the collection of automobile licenses shall terminate June thirtieth. The fee for licenses issued after January first of each year, and before June thirtieth, for the period ending June thirtieth, shall be one-half the annual fee.

The foregoing schedule of license fees on motor vehicles shall become effective July first, one thousand nine hundred and twenty-one, and the present schedule of license fees shall remain in force until said date. The fiscal year for the payment of said license fees shall begin July first of each year.

##### FEES TO COVER LICENSES, ETC.

Sec. 29. The foregoing fees shall be paid to the Secretary of State at the time of issuance of said registration certificates, permits, or licenses. They shall include all costs of registration, issuance of permits, licenses, and certificates, and the furnishing of registration plates, and shall be in lieu of all other State or local taxes (except ad valorem), registration, or license fees, privilege taxes, or other charges: *Provided, however*, a county, city, or town may charge a license or registration fee on motor vehicles in the sum of one dollar (\$1) per annum: *Provided further*, that no county, city, or town shall charge or collect an additional fee for the privilege of operating a motor vehicle, either as chauffeur



feur's or driver's license: *Provided*, nothing herein shall prevent the governing authorities of any city from regulating, licensing, controlling of chauffeurs and drivers of any such car or vehicle, and charging a reasonable fee: *Provided further*, that any city or town may charge a license not to exceed fifty dollars (\$50) for any motor vehicle used in transporting persons or property for hire in lieu of all other charges, fees, and licenses now charged.

#### VIOLATION A MISDEMEANOR

SEC. 30. Any person, firm, or corporation that shall operate any motor vehicle upon any highway of the State, without license, as is required under this act, shall be guilty of a misdemeanor and fined or imprisoned in the discretion of the court. No motor or other vehicle or trailer which has a greater rated weight of both vehicle and load exceeding seven and one-half (7½) tons shall go over or operated upon any State highway. Any person, firm, or corporation violating the provisions of this section shall be guilty of a misdemeanor.

SEC. 31. For the purpose of carrying out the provisions of this act the funds collected hereunder shall be kept by the State Treasurer in a separate fund to be known and designated as "State Highway Fund," and all moneys directed to be paid out under this act shall be paid by the State Treasurer upon voucher issued by the State Highway Commission, and charged to the State Highway Fund.

#### GASOLINE TAX

SEC. 32. The following words, terms, and phrases in this section of this act for the purposes hereof are defined as follows:

(a) "Motor vehicles" shall include all vehicles, movable engines, or machines which are operated or propelled by combustion of gasoline, or other volatile and inflammable liquid fuels, and are operated and used for travel on the public highways.

(b) "Motor vehicle fuels" are such fuels known as gasoline, benzine, naphtha, liberty fuel, and such other volatile and inflammable liquids produced or compounded for the purposes of operating or propelling motor vehicles, except the product commonly known as kerosene oil.

(c) The term "dealer" is hereby defined as any person or corporation who has in his, it or their possession, for sale to the consumer, any gasoline, benzine, naphtha, liberty fuel, and such other volatile or inflammable liquids produced or compounded for operating or propelling motor vehicles as herein defined for use, distribution or sale in the State.

SEC. 33. That in addition to the taxes now provided for by law, each and every dealer, as defined in this act, who is now engaged, or who may hereafter engage, in his own name or in the name of others, or in the same of his representatives or agents in this State, in the sale or distribution as dealers or distributors of motor vehicle fuel as herein defined, shall not later than the twentieth day of each calendar month, render a statement to the Secretary of State, showing all motor vehicle fuel purchased for sale and delivered during the preceding calendar month, and pay a license tax of three cents per gallon on all motor vehicle fuel so purchased as shown by such statement in the manner and within the time aforesaid: *Provided, however*, that whenever any dealer or distributor of motor vehicle fuel shall show to the satisfaction of the Secretary of State, by complying with such rules and regulations as shall be made by the Secretary of State for that purpose, that the tax hereby provided to be paid by the dealer or distributor of motor vehicle fuel as aforesaid has been voluntarily paid by the wholesale dealer, then and in that event the reports required by this act to be made by such dealer or distributor, and by the wholesale dealer, shall not be required to be made, and the dealer or distributor shall not be required to pay the tax hereby levied.

That every wholesale dealer selling any motor vehicle fuel in the State shall render to the Secretary of State every thirty days a statement of all the sales in the State, which statement shall contain the name and business address of the dealer and the date and amount of such sale. Any wholesale dealer willfully failing to comply with the provisions of this section shall be guilty of a misdemeanor and fined or imprisoned in the discretion of the court.

SEC. 34. Every dealer in motor vehicle fuel shall render to the Secretary of State, on or before the twentieth day of each month, on forms prescribed, prepared, and furnished by the Secretary of State, a sworn statement of the number

of gallons of motor vehicle fuel purchased and sold to be used in motor vehicles as herein defined by him or them during the preceding calendar month, which statement shall be sworn to by one of the principal officers in the case of a domestic corporation, or by the resident general agent of a foreign corporation, by the managing agent or owner in case of a firm or association, and shall contain an itemized account of the dates and quantities of motor vehicle fuel purchased.

SEC. 35. Said license tax shall be paid on or before the twentieth day of each month to the Secretary of State, who shall receipt the dealer therefor and promptly turn over to the State Treasurer as other receipts of his office, and the State Treasurer shall place the same to the credit of the "State Highway Fund," to be expended as provided by this act.

SEC. 36. Every dealer in motor vehicle fuel shall keep a record in such form as may be prescribed by the Secretary of State of all purchases of motor vehicle fuel; such records to include copies of all invoices or bills of all such purchases, and shall at all times during the business hours of the day be subject to inspection by the Secretary of State or his deputies, or such other officers as may be duly authorized by said Secretary of State.

SEC. 37. Any dealer, association of persons, firm, or corporation violating any of the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not to exceed one hundred dollars (\$100), or by imprisonment in the county jail for a period not to exceed six months, or both.

SEC. 38. If any person, firm, or corporation shall fail to pay the tax on motor vehicle fuel, due by such person, firm, or corporation under the provisions of this act, within thirty (30) days after such tax shall be due, the State Treasurer shall bring the appropriate action in the courts of the State for the recovery of such tax, and if it shall be found as a fact that such failure to pay was willful on the part of such person, firm, or corporation, judgment shall be rendered against such person, firm, or corporation for double the amount of the tax found to be due, together with cost, and the amount collected shall be placed by the State Treasurer to the "State Highway Fund." All remedies now, or which may hereafter be given by the laws of the State of North Carolina for the collection of taxes, are expressly given herein for the collection of the judgment recovered by the State Treasurer under this section.

#### BOND ISSUE FOR ROAD CONSTRUCTION

SEC. 39. That for the purpose of carrying out the provisions of this act, and of enabling the State to avail itself to the fullest extent of all Federal aid funds that are now or may become available for use in the State for road purposes, the State Treasurer is hereby authorized, empowered, and directed to issue and sell serial bonds of the State payable in not less than ten nor more than forty years from the date of issue, and aggregating not more than fifty million dollars (\$50,000,000), to be known, styled, and designated "State of North Carolina Highway Serial Bonds," said bonds to mature at such time or times, not less than ten years nor more than forty years from the date of said bonds, as may be determined and fixed by the Governor and Council of State. Not more than ten million dollars (\$10,000,000) of said bonds may be issued and sold in the year one thousand nine hundred and twenty-one; and not more than ten million dollars (\$10,000,000) of said bonds may be issued and sold in the year one thousand nine hundred and twenty-two; and the balance may be issued and sold at the rate of ten million dollars (\$10,000,000) per annum: *Provided, however*, that if the progress of the work shall be such as to justify it, then, and in that event, more than ten million dollars (\$10,000,000) of the total amount herein authorized may be issued and sold in any one year at the request of the State Highway Commission, and by and with the consent of the Governor and Council of State.

An additional issue of fifteen million dollars (\$15,000,000) of bonds is hereby authorized. The said bonds shall be issued in the manner and in accordance with the provisions of said chapter two of said act as amended, and the proceeds received therefrom shall be used for the purposes in said act prescribed.

SEC. 40. That all of said bonds shall bear interest at a rate to be fixed by the Governor and Council of State, but not exceeding five per cent per annum, and are to be dated the first day of January or July, of the year in which the bonds are issued. Interest on said bonds shall be payable semi-annually on the first day of January and July of each and every



year so long as any portion of said bonds shall remain unpaid; and when sold and turned over to the State Treasurer all of said fund to be part of the construction fund and known as the "State Highway Fund."

SEC. 41. That all bonds authorized and issued under this act shall be coupon bonds of the denomination of one hundred dollars (\$100), five hundred dollars (\$500), and one thousand dollars (\$1,000), respectively, or such other denominations as the State Treasurer may determine, and shall be signed by the Governor and the State Treasurer, and sealed with the great seal of the State. The coupons thereon may be signed by the State Treasurer alone, or he may have lithographed, engraved or printed thereon a facsimile of his signature. The said bonds shall be in all other respects in such form as the State Treasurer may direct. The coupons after maturity shall be receivable in payment of taxes, debts, dues, licenses, fines, and demands due the State of any kind whatsoever, which shall be expressed on the face of the bonds. Before selling the bonds herein authorized to be issued, the State Treasurer shall advertise the sale and invite sealed bids in such manner as in his judgment may seem most effectual to secure the best price. He is authorized to accept bids for the entire amount of such issue to be sold in any one year, or any portion thereof, and when the conditions are equal, he shall give the preference of purchase to the citizens of North Carolina; and he is empowered to sell the bonds herein authorized in such manner as in his judgment will produce the best price, but not for less than par and accrued interest, and the full faith, credit, and taxing power of the State are hereby pledged for the payment of the principal and interest of the bonds herein authorized to be issued and sold. All expenses necessarily incurred in the preparation and sale of the bonds shall be paid from the proceeds of such sale.

SEC. 42. That the said bonds shall be subject to registration as to principal alone, or both principal and interest, in accordance with the provisions of the general law governing registration of the State securities as the same may from time to time be in force.

SEC. 43. The said bonds and coupons and notes issued in anticipation of the sale of the bonds, or for the payment of the interest thereon, shall be exempt from all State, county, and municipal taxation or assessments, direct or indirect, general or special, whether imposed for the purpose of general revenue or other interest thereon, or installment or principal, be subject to taxation for incomes, nor shall said bonds and coupons and notes issued in anticipation of sale of the bonds, or for the payment of the interest thereon, or installment or principal, be subject to taxation when constituting a part of the surplus of any bank, trust company or other corporation.

SEC. 44. It shall be lawful for all executors, administrators, guardians, and fiduciaries generally, and all sinking fund commissioners to invest any moneys in their hands in said bonds when such investments are made.

SEC. 45. The State Treasurer, by and with the consent of the Governor and Council of State, is hereby authorized to borrow money at the lowest rate of interest obtainable, in anticipation of the sale of the bonds herein authorized, and for the purposes for which said bonds are authorized to be issued. The State Treasurer is hereby further authorized, by and with the consent of the Governor and Council of State, to borrow money at the lowest rate of interest obtainable, for the purpose of paying the interest on, or any installments of the said bonds, in the event that there are not sufficient funds in the State Treasury with which to pay said interest or installments of principal as they respectively fall due. The State Treasurer shall execute and issue notes of the State for the money so borrowed, and he is hereby authorized to renew any such notes from time to time by issuing new notes. The rates of interest, the date of payment of said notes or renewals, and all matters and details in connection with the issuance and sale thereof shall be fixed and determined by the Governor and Council of State. Such notes when issued shall be entitled to all the privileges, immunities and exemptions that the bonds authorized to be issued are entitled to. The full faith, credit and taxing power of the State are hereby pledged for the payment of such notes as may be issued, and all interest thereon. The proceeds received from said notes, other than notes that may be issued to pay interest or installments of principal of the bonds, shall be placed by the State Treasurer in the "State Highway Fund" herein provided for. The notes issued in anticipation of the sale of the bonds shall be paid with funds

derived from the sale of bonds, unless otherwise provided for by the General Assembly. The notes issued for the payment of interest shall be paid from the funds collected under this act, as herein provided for, when collected, unless otherwise provided for by the General Assembly.

SEC. 46. The State Highway Commission, under rules and regulations established by the commission, shall have full control over the funds in the hands of the State Treasurer known as the "State Highway Fund," and the same shall be paid out by the State Treasurer upon proper voucher of State Highway Commission for carrying out the purposes of this act.

#### LAW TO BE PUBLISHED

SEC. 47. That the State Highway Commission, as soon as practicable after the ratification of this act, shall have carefully compiled the road laws of this State relating to the State highway system, and shall have published not exceeding 10,000 copies of said compilation to be distributed by said commission, the cost thereof to be paid out of the State Highway Fund.

SEC. 48. All contracts or agreements heretofore made or entered into by the existing Highway Commission as to location and construction of any roads or highways, or for any other purpose, shall be and remain in full force and effect and taken over by the Highway Commission provided for in this act, and all contractors who have entered into any contract with the existing Highway Commission, whether private or municipal, shall carry out such contracts so made and all rights and remedies existing under such contracts by the present Highway Commission or any contractor shall remain in full force and effect.

#### MALFEASANCE A FELONY

SEC. 49. Any member of the Highway Commission, or any person employed by the Highway Commission in connection with carrying on the work outlined in this act, who shall knowingly, or fraudulently, perform any act with intent to injure the State, or any contractor, or his agent or employee, who shall conspire with a member of the Highway Commission or employee thereof or any State official to permit a violation of the contract or contractor with intent to injure the State, or any agent or employee of any contractor who shall do any work on any State highway in violation of contract, and with intent to defraud the State, and the member of the State Highway Commission, employee, or State official so conspiring shall each be guilty of a felony, and upon conviction thereof, shall be confined in the State Prison not less than one year and not more than five years, and be liable to the State in a civil action instituted by the State on relation of the State Highway Commission, for double the amount the State may have lost by reason thereof.

SEC. 50. The board of county commissioners or other road-governing bodies of the various counties in the State are hereby relieved of all responsibility or liability for the upkeep or maintenance of any of the roads or bridges thereon constituting the State highway system, after the same shall have been taken over, and the control thereof assumed by the State Highway Commission, and the State Highway Commission, both as a commission and the individual members thereof, shall not be liable for any damage sustained by any person, firm, or corporation on the said State highway system, except for wanton and corrupt negligence.

SEC. 51. That if any provision of this act shall be declared by the courts unconstitutional, such declaration shall not affect the validity of any of the remaining provisions of this act.

SEC. 52. All laws and clauses of laws in conflict with the provisions of this act, except chapter sixty-four of the Public Laws of the Extra Session of the General Assembly of nineteen twenty, are to the extent of such conflict hereby repealed.

SEC. 53. Until the organization of the State Highway Commission provided for in this act the present existing State Highway Commission shall continue in effect and be authorized to act pursuant to chapter 189, Public Laws of nineteen nineteen, and all other laws in force at this time relating to the State Highway Commission, and to enter into contracts, which, together with all existing contracts, shall be taken over by the State Highway Commission created by this act, and in all other respects this act shall be in force from and after the date of its ratification.

Ratified this the 5th day of March, A. D. 1923.



## STATUS OF STATE WORK IN NORTH CAROLINA

*Projects Under Construction*

NO.	COUNTY	LENGTH	TYPE	ESTIMATED COST	BEGUN	CONTRACTOR
101	Beaufort.....	4.23	P. C.	\$ 145,492.76	1-20-23	Public Service Production Co.
105A	Beaufort.....	2.00	P. C.	78,839.42	11-11-22	J. L. McGhee Const. Co.
105B	Beaufort.....	5.037	P. C.	164,301.61	1-19-23	Public Service Production Co.
106	Bertie.....	7.12	T. S.	58,204.90	9-11-22	J. F. Mulligan Const. Co.—Boney & Hostetler.
110	Camden.....	2.71	R. C.	134,866.48	7-11-22	State Forces
113	Chowan.....	10.32	Graded	39,743.33	2-1-22	Nello L. Teer—Gregory & Talbot.
114	Chowan.....	10.00	Graded	45,064.09	1-3-22	Battershill & Goode—Gregory & Talbot.
125	Edgecombe.....	15.11	A. C.	426,438.76	2-28-22	R. G. Lassiter & Co.
129	Edgecombe.....	8.1	Graded	40,850.00	9-14-22	State Forces
131	Gates.....	15.95	T. S.	135,515.60	8-22-22	Bacon & Moore—W. D. Murray—Sadler Corp.
132	Gates.....	10.90	T. S.	63,921.00	8-29-22	J. A. Marrow.
133	Gates-Pasquotank.	14.07	Gravel	138,045.77	11-7-22	C. W. Lacy—Pittsburg Des Moines Steel Co.
137	Halifax.....	5.95	Bit Mac	180,441.92	11-21-21	O. F. Leighton—A. C. House.
138A	Halifax-North-		& P. C.			
	ampton.....	12.59	S. C.	131,712.13	5-1-22	Nello Teer—Richards Bros.
145	Hertford.....	12.88	Graded	88,161.42	7-31-22	Jameson & Bro.—Atlantic Bridge Co.
147	Hertford-Bertie..	17.36	Graded	122,245.86	3-5-23	Nello Teer—Atlantic Bridge Co.
151	Hyde.....	4.30	T. S.	71,422.28	12-10-21	C. W. Lacy—Porter & Peck.
152	Hyde.....	10.89	S. C.	75,651.40	1-15-23	O. A. Mann & Co.
154	Martin.....	11.27	A. C.	394,153.29	4-17-22	Sou. Willite Paving Co.—O. F. Leighton, Inc.
155	Martin-Pitt.....	20.01	T. S.	98,176.65	1-9-22	J. P. Dicus—J. M. Gregory.
157A	Martin.....	12.50	T. S.	85,813.86	10-18-22	Jamison & Bro.—J. A. Marrow.
157B	Martin.....	12.50	T. S.	90,396.24	11-13-22	J. F. Mulligan Constr. Co.—Batson Cook Co.
159	Nash.....	11.22	T. S.	89,942.43	1-2-22	J. A. Kreis & Co.
167	Northampton.....	20.48	T. S.	92,444.11	7-17-22	Virginia Contr. Co.—Bacon & Moore.
173	Perquimans-Pas-		R. C.			
	quotank.....	7.22		239,444.70	8-25-22	Williams & Williams.
174	Pasquotank-Cam-					
	den.....	2.40	Cord	55,818.01	4-3-22	D. E. Williams.
175	Pasquotank.....	9.50	Brick	217,405.72	4-6-21	County Commissioners.
183A	Pitt.....	13.54	P. C.	399,854.40	11-13-22	S. J. Groves & Sons.
183B	Pitt.....		Bridge	32,343.30	3-27-22	B. J. Boyles.
184	Pitt.....	7.14	P. C.	206,516.42	11-21-22	Public Service Production Co.
185	Pitt.....	14.35	Graded	31,069.72	3-29-22	J. A. Marrow.
191	Tyrrell.....	6.91	S. C.	58,594.41	1-20-22	C. W. Lacy—M. M. Jones.
195	Washington.....	15.18	S. C.	65,619.35	2-28-22	L. M. Lee & Co.—B. J. Boyles.
196	Washington.....	14.93	S. C.	83,632.78	5-15-22	W. N. Thompson.
200	Carteret.....	13.68	Graded	79,629.00	7-21-22	Eagle Eng. Co.—Batson-Cooke Co.
201	Carteret.....	14.14	Graded	81,652.62	1-17-23	Duplin Constr. Co.—Batson Cooke Co.
210	Craven.....	8.34	A. C.	292,698.06	4-3-22	West Construction Co.—A. P. Gilbert.
211	Craven.....	9.93	A. C.	288,946.02	1-30-22	Union Paving Co.
219	Duplin-Lenoir.....	15.60	Graded	148,339.29	6-1-21	Chitwood & Carpenter.
220	Wayne-Duplin.....	14.53	A. C.	394,301.05	2-27-23	Union Paving Co.
236 <sup>(FA)</sup>	Johnson.....	14.83	A. C.	475,321.55	10-2-22	R. G. Lassiter & Co.
245 <sup>(143)</sup>	Jones.....	15.67	P. C.	265,179.53	3-22-22	Hyde & Baxter.
254	Lenoir.....		Bridge	73,415.32	11-22-22	Roanoke Iron & Bridge Co.
256	Lenoir.....		Bridges	57,680.00	1-11-23	Englehardt-Kuehen.
263	Pamlico.....	12.03	A. C.	289,324.20	3-27-22	Union Paving Co.
264	Craven-Pamlico.....		Bridge	27,156.25	7-24-22	Rhyne & Kitchen.
272	Sampson.....	16.47	Graded	98,807.39	6-19-22	R. E. Martin—Striblin—Staudy & Newell.
273	Sampson.....	2.44	P. C.	96,916.82	2-27-23	Eagle Engineering Co.
280	Wayne.....	10.01	A. C.	311,352.36	11-28-21	Union Paving Co.
282	Wayne.....	14.22	A. C.	398,168.00	11-11-22	Union Paving Co.
291	Wilson.....	7.63	A. C.	203,493.18	1-17-22	P. R. Ashby.
294	Wilson.....		Bridge	15,770.80	11-29-22	Stearns Bros.
300	Bladen.....	11.99	S. C.	64,911.71	4-8-22	T. W. Chandler—Nello Teer.
301	Bladen.....	13.17	T. S.	82,028.21	11-21-21	J. F. Mulligan—Powell Paving & Const. Co.
312	Brunswick.....	9.77	P. C.	347,319.68	7-5-22	Alabama Conc. Prod. Co.—Batson-Cooke Co.
313	Brunswick.....	3.44	A. C.	105,706.65	3-15-22	Sou. Willite Paving Co.—Roanoke Bridge & Iron Works.
314	Brunswick.....	15.82	S. C.	109,259.10	2-23-22	Hagedorn Const. Co.
316	Brunswick.....	12.12	S. C.	80,068.72	8-14-22	B. Frank Price—Batson, Cooke Co.
317	Brunswick.....		Bridge	19,783.20	11-30-22	Atlantic Bridge Co.
325	Columbus.....	11.22	T. S.	105,530.04	11-3-21	J. A. Kreis—Cornell-Young Co.
326	Columbus.....	13.61	S. C.	195,838.19	5-23-22	J. T. Plott—J. A. Kreis & Co.
327	Columbus.....	5.2	S. C.	38,269.44	6-21-22	J. A. Kreis.
328	Columbus.....	7.03	P. C.	219,371.68	12-26-22	L. L. Tindall
340	Cumberland.....	11.07	P. C.	381,032.02	6-15-22	Alabama Conc. Prod. Co.—Hobbs & Peabody.
342	Cumberland.....	5.91	A. C.	177,402.50	10-30-22	A. J. Wardrep.
351	New Hanover.....	10.64	A. C.	189,540.00	1-8-23	Southern Willite Paving Co.
363	Onslow.....	15.24	T. S.	208,476.95	3-5-23	Newell Constr. Co.—Pittsburg-Des Moines Steel Co.
364A	Onslow.....	9.95	S. C.	44,631.40	3-14-22	R. E. Martin.
364B	Onslow.....	12.84	T. S.	99,819.50	6-26-22	A. W. McClay.
375	Pender.....	15.56	S. C.	72,533.34	11-11-21	A. W. McClay.
376	Pender.....	7.64	Graded	94,757.85	11-11-21	C. G. Kershaw Const. Co.—Cornell Young Co.
377	Pender-Duplin.....	1.61	S. C.	76,985.70	3-22-22	R. E. Martin—Hazell-Conerath-Quist Co.
378	Pender.....	14.12	W. B. Mac.	213,502.96	7-19-22	C. W. Lacy.



## STATUS OF STATE WORK IN NORTH CAROLINA---Continued

## Projects Under Construction (Continued)

NO.	COUNTY	LENGTH	TYPE	ESTIMATED COST	BEGUN	CONTRACTOR
379	Pender.....	10.00	S. A.	\$ 100,000.00	5-22-22	State Forces.
380	Pender.....	8.98	W. B. Mac.	162,212.60	3-6-23	C. W. Lacy.
386-87	(F A-140) Robeson	19.8	P. C.	647,888.05	9-4-22	James O. Heyworth.
389	Robeson-Colum...	1.56	T. S.	83,463.38	10-26-21	L. A. Chitwood.
391B	Robeson.....	1.10	T. S.	17,433.00	2-26-23	H. M. Beasley.
400	Chatham.....		Bridge	57,420.22	4-14-22	R. M. Walker & Co.
402	Chatham.....	6.92	T. S.	33,940.28	8-1-22	W. N. Thompson.
403	Chatham.....	7.01	T. S.	66,814.00	2-27-23	C. G. Kershaw.
411	Durham.....	5.81	P. C.	211,574.92	9-15-21	Hutton Eng. & Const. Co.
412	Durham.....	8.80	P. C.	252,582.00	11-15-22	L. L. Tindall.
419	Franklin.....	12.82	T. S.	63,021.97	7-27-22	Jamison Bros.—J. M. Gregory.
420	Franklin.....	1.56	R. C.	55,421.30	7-11-22	Chandler & Ragland.
428	Granville.....	4.19	R. C.	142,637.77	7-14-22	Pittman Const. Co.
429	Granville.....	6.94	P. C.	239,021.90	3-21-23	R. B. Sandidge.
456	Orange.....	9.81	Graded	37,459.07	1-7-22	Crawford & Crawford—Nello Teer.
460	Orange.....	9.87	A. C.	296,835.55	9-25-22	R. M. Hudson & Co.
463	Person.....	11.24	P. C.	327,171.35	8-14-22	Porter & Boyd.
473	(FA 146) Vance.....	7.83	P. C.	265,546.60	7-11-22	R. G. Lassiter & Co.
481	Wake.....	7.40	A. C.	254,995.34	1-24-22	Union Paving Co.—P. R. Ashby.
484	Wake.....	8.79	P. C.	311,590.40	8-23-22	P. R. Ashby-Booz-Lloyd & Co.
492	Warren.....	4.48	Bit Mac	100,436.13	4-10-22	Porter & Peck—A. C. House.
493	Warren.....	3.39	Bit Mac	77,866.80	7-27-22	Porter & Peck.
494	(FA 147) Warren.....	6.21	A. C.	208,130.01	9-6-22	Clifford Engineering Co.
502	Alamance.....	17.43	T. S. & B. M.	138,629.97	7-17-22	W. E. Graham—Hanford Bros.
503	Alamance.....		Bridge	59,450.38	7-17-22	Atlantic Bridge Co.
504	Alamance.....	5.22	A. C.	154,127.16	3-17-22	Elliott & Sholes.
512	Caswell.....	11.67	T. S.	54,375.53	2-19-23	J. T. Plott.
525	Davidson.....	10.24	A. C.	363,850.08	12-23-21	Elliott & Sons & Boggs—Austin Bros. Bridge Co.
528	Davidson.....	10.24	P. C.	427,511.92	10-2-22	Hagedorn Constr. Co.—J. A. Peterson.
532	Guilford.....	11.70	A. C.	385,957.88	2-1-22	Elliott-Sholes Co.
532B	Guilford.....		Bridges	24,730.00	1-5-23	L. M. Lowdermilk.
533	Guilford-Forsyth..	10.59	P. C.	427,997.62	7-11-21	Royer-Ferguson Const. Co.
535	Guilford.....	7.78	R. C.	277,955.21	4-19-22	Leaksville Lumber Co.
544	Hoke.....	10.45	S. C.	32,445.49	5-16-22	O. A. Mann & Co.—Chitwood & Carpenter.
545	Hoke.....	9.15	T. S.	58,195.06	6-5-22	O. A. Mann & Co.—A. W. McClay.
546	Hoke.....	0.84	S. A.	27,949.00	11-27-22	Dawkins Constr. Co.
555	Montgomery.....	20.55	T. S.	103,708.00	2-19-23	Mayfield Construction Co.—F. P. Holder.
566	Moore.....	7.14	T. S.	62,079.21	3-6-22	Gibson Const. Co.—Nello Teer.
569	Moore.....	18.97	S. C.	97,151.45	8-1-22	Mayfield Const. Co.
577	Randolph.....	13.77	P. C.	422,343.57	4-18-22	Royer-Ferguson Co., Inc.—J. L. Brinkley.
588	Rockingham.....	7.98	R. C.	266,498.43	4-11-22	Cheatwood & Driscoll.
589	Rockingham.....	9.81	P. C.	324,975.31	10-30-22	Cheatwood & Driscoll—Atlantic Bridge Co.
590	Rockingham.....	2.10	P. C.	66,062.18	12-5-21	Geo. R. Martin
593	(FA 38) Rockingham-Cas-					
	well.....	17.98	P. C.	525,393.22	7-11-22	J. A. Kreis.
600	Alexander.....	9.3	Graded	12,530.98	5-26-22	Bolton Construction Co.
602	Alexander.....	9.28	Bit Mac	189,329.80	10-9-22	W. E. Graham.
606	Stanley-Anson.....		Bridge	54,759.32	3-23-22	Concrete Steel Bridge Co.
607	Anson.....	6.39	T. S.	37,098.91	3-21-22	Geer & Wilson—Booz-Lloyd & Co.
608	Anson.....	7.88	A. C.	345,408.58	9-27-22	Lampton & Burks—J. A. Peterson.
614	(FA 144) Cabarrus.....	9.20	P. C.	350,085.07	7-21-22	A. L. Harris—Oliver & Costello Bros.
615	Cabarrus.....	3.88	A. C.	98,741.17	3-9-23	Thompson-Caldwell—Atlantic Bridge Co.
622	Catawba.....	10.85	A. C.	354,321.44	1-23-22	Union Paving Co.
629	Catawba.....	7.52	P. C.	268,662.48	6-5-22	A. L. Harris—R. M. Thurmond & Co.
630B	Gaston.....	6.65	A. C.	218,625.00	8-8-22	W. F. McCannless, Hobbs-Peabody Constr. Co.
632	Gaston.....	8.50	R. C.	291,868.94	1-2-22	Davis-Wilcox Const. Co.
633B	Gaston.....	3.8	A. C.	57,247.41	1-6-23	Gaston County.
639	Iredell.....	10.59	A. C.	387,346.19	1-2-22	R. M. Hudson Co.—Luten Bridge Co.
640	Iredell.....	8.17	Bit Mac	181,990.82	9-26-22	W. E. Graham.
647	Lincoln.....	7.10	P. C.	250,108.15	6-5-22	A. L. Harris—R. M. Thurmond & Co.
653	Mecklenburg.....	8.84	A. C.	308,732.43	2-28-22	Union Paving Co.—Luten Bridge Co.
654	Mecklenburg.....	10.1	A. C.	302,887.09	4-3-22	Lampton & Burks.
658	Mecklenburg.....	9.55	A. C.	266,758.80	10-9-22	Union Paving Co.
661	Richmond.....	9.76	T. S.	40,683.41	7-18-22	McDonald & Brooks.
665	Richmond.....	5.77	A. C.	164,501.23	7-28-22	A. J. Wardrep.
670	Cabarrus-Rowan..	4.53	P. C.	142,221.53	6-29-22	Harris Construction Company.
671	Rowan.....	7.34	A. C.	309,262.14	3-20-23	Thompson-Caldwell Construction Co.—Atlantic Bridge Co.
673	Davidson-Rowan..	.59	Bridge	221,353.00	9-19-22	Hardaway Contracting Co.—Elliott & Sons.
677	Scotland-Robeson	7.11	R. & P. C.	283,460.61	4-26-22	P. R. Ashby—J. B. Murphy.
691	Union.....		Bridge	14,520.00	2-13-23	J. S. Brinkley.
694	Union.....		Bridge	23,549.13	11-14-22	Hagedorn Construction Co.
696	Union.....	6.05	A. C.	139,901.30	1-30-23	Redmon Construction Co.
700	Alleghany.....	7.90	W. B. Mac	132,297.33	6-23-21	W. E. Graham.
701	Alleghany-Wilkes..	8.00	W. B. Mac	166,245.20	6-16-21	W. E. Graham.
702A	Alleghany.....	7.75	Bit Mac & Gravel	209,188.98	10-31-22	O'Brien Constr. Co.—Luten Bridge Co.



# STATUS OF STATE WORK IN NORTH CAROLINA---Continued

## Projects Under Construction (Continued)

NO.	COUNTY	LENGTH	TYPE	ESTIMATED COST	BEGUN	CONTRACTOR
711	Ashe.....	6.50	Gravel	\$ 60,000.00	9-7-22	Little Contracting Co.
712	Ashe.....	11.06	Gravel	197,687.38	10-24-22	J. T. Plott.
713b (FA 139)	Ashe.....		Bridges	272,283.22	8-22-22	Concrete Steel Bridge Co.—R'dway not let.
724	Caldwell.....	4.66	T. S.	51,890.66	5-8-22	County Road Commrs—R. M. Thurmond & Co.
731	Davie.....	5.46	P. C.	195,393.11	3-13-22	G. R. Martin-Heilig & Sherrill.
741	Forsyth.....	8.90	P & R. C.	315,025.81	7-27-22	Hardaway Construction Company.
742 (FA 137)	Forsyth.....	10.62	R. C.	413,067.27	6-20-22	Harris Construction Co.
744	Forsyth.....	2.00	T. S.	*	1-11-22	Forsyth County.
750	Stokes.....	14.86	T. S.	93,054.48	9-15-21	J. F. Mulligan Const. Co.—Lee J. Smith.
752	Stokes.....	9.67	T. S.	124,874.75	2-17-23	W. E. Graham.
761	Surry.....	2.22	P. C.	77,334.01	11-22-22	Geo. R. Martin.
765	Surry.....	3.40	P. C.	112,685.76	10-24-22	Campbell Constr. Co.
770A	Watauga.....	3.00	Bit-Mac.	40,000.00	8-12-22	State Forces.
771A	Watauga.....	2.50	Bit. Mac	30,000.00	9-7-22	State Forces.
771B	Watauga.....	13.50	Gravel	35,000.00	9-7-22	State Forces.
780	Wilkes.....	7.83	Recon	25,000.00	7-25-21	J. F. Mulligan.—State Forces.
781	Wilkes.....	14.50	Recon	154,000.00	7-25-21	J. F. Mulligan.—State Forces.
782	Wilkes.....	5.97	R. C.	184,614.65	3-29-22	Hyde & Baxter.
784	Wilkes.....	4.97	T. S.	85,966.21	8-30-22	J. F. Mulligan Constr. Co.—Foster Constr. Co.
790	Yadkin.....	10.12	P. C.	330,254.27	4-24-22	Pittman Construction Co.
800	Avery.....	5.84	Grav & R C	198,827.02	7-24-22	O'Brien Const. Co.—J. A. Kreis.
811	Burke.....	5.24	P. C.	185,132.97	1-13-22	Southern Dray Co.
814	Burke.....	8.69	S. C.	13,459.60	8-15-22	M. A. Kollock.
815	Burke-Clev'nd.-Lincoln	11.63	T. S.	120,407.87	4-28-22	Geer & Wilson—J. L. Van Glahn.
821	Cleveland.....	1.58	P. C.	60,192.33	10-31-22	Davis-Wilcox Constr. Co.
822 (FA 150)	Cleveland.....	10.47	P. C.	404,444.48	9-27-22	Elliott & Sons—J. A. Kreis & Co.
833	Henderson.....	5.20	Gravel	34,952.94	1-3-22	S. L. Davis Const. Co.—Asheville Const. Co.
846	McDowell.....	10.06	Gravel	204,680.74	9-22-21	Asheville Const. Co.—W. T. Taylor Const. Co.
847	McDowell.....	3.84	Graded	91,217.50	10-19-22	C. W. Lacy—Oliver & Costello Bros.
848	McDowell.....		Bridge	18,597.04	11-21-22	R. M. Thurmond & Co.
855	Mitchell.....	4.72	P. C.	174,398.78	9-12-21	Fiske-Carter Construction Co.
856	Mitchell.....	6.88	Bit Mac	239,343.83	3-20-22	Porter & Boyd—L. J. Chandler & Co.
858	Mitchell.....		Bridge	42,367.49	10-2-22	R. M. Thurmond & Co.
860	Mitchell.....	5.65	W. B. Mac	152,908.42	4-21-22	J. F. Mulligan—W. H. Anderson Const. Co.
866	Polk.....	5.96	Bit-Mac.	180,393.40	4-3-22	Dunn & Woodall—Henry Construction Co.
876 (FA 178)	Rutherford.....	4.80	P. C.	146,264.80	10-30-22	Fiske-Carter Construction Co.
880	Rutherford.....		Bridge	24,679.43	4-4-22	Austin Bros. Bridge Co.
882	Rutherford.....	15.80	T. S.	94,676.78	9-20-22	C. R. Willard & Sons.
888	Yancey.....	15.22	W. B. Mac	230,499.94	10-10-22	The Luck Co.
901 (FA 148)	Buncombe.....	7.52	P. C.	354,082.45	11-6-22	R. C. Stephens—A. J. Wardrep
903	Buncombe.....	2.58	A. C.	100,399.47	4-10-22	Asheville Paving Co.—R. C. Stevens.
904	Buncombe.....	1.60	A. C.	80,969.13	3-13-22	Asheville Paving Co.—R. C. Stevens.
911	Cherokee.....	10.33	Gravel	144,991.44	10-25-21	H. A. Wells—Southern Dray Co.
913	Cherokee.....	10.33	W. B. Mac	95,554.80	8-8-22	Mills, Williams Construction Company.
920	Clay.....	5.01	Gravel	50,716.66	1-9-22	E. A. Wilson & Co.—W. T. Moore Conc. Prod. Co.
921	Clay.....	12.37	Gravel	99,988.02	10-24-21	Lee J. Smith Const. Co.—W. T. Moore Conc. Prod. Co.
930	Graham.....	12.90	Gravel	143,574.20	10-15-21	Lee J. Smith Const. Co.—C. M. Dicus.
940	Haywood.....	7.13	W. B. Mac	126,069.30	4-14-22	Alexander & Patton—H. A. Brown & Co.
950	Jackson.....	7.56	Gravel	145,313.30	6-13-21	Wright & Nave—O'Brien Const. Co.
951	Jackson.....	11.85	W. B. Mac	249,546.00	8-17-22	R. H. Wright & Sons—W. T. Moore Conc. Prod. Co.
952A	Jackson.....	10.35	Graded	164,126.60	8-17-22	Brooks-Calloway Company.
954	Jackson.....	1.68	P. C.	90,871.77	7-1-22	Mills, Williams Construction Company.
960	Macon.....	4.97	S. C.	69,100.57	6-6-21	J. T. Plott—J. E. Lane & Co.
961	Macon.....	4.77	T. S.	58,340.59	12-5-21	J. T. Plott—J. E. Lane & Co.
962	Macon.....	13.58	W. B. Mac	171,200.05	4-24-22	O'Brien Const. Co.—Griffin Const. Co.
963	Macon.....	8.68	Graded	124,354.01	11-10-22	Costello Bros.—Brooks-Calloway Co.
970	Madison-Yancey.....	13.80	W. B. Mac	218,940.17	11-11-21	R. H. Wright & Sons—O'Brien Const. Co.
980	Macon-Swain.....	17.84	W. B. Mac	350,175.11	3-20-22	Costello Bros.—Condon & Condon.
990	Transylvania.....	8.87	W. B. Mac	151,238.89	6-5-22	Sam L. Davis Const. Co.—R. C. Stevens.

\*Built by county

## Projects Completed

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	COMPLETED	CONTRACTOR
100	Beaufort.....	10.50	R. C.	\$ 369,777.70	.....	W. T. Hadlow
103	Beaufort.....	.03	R. C.	1,706.75	7-3-22	R. G. Lassiter.
139	Halifax.....		Bridge	*20,425.59	8-25-22	Chandler & Ragland—Porter & Peck.
140	Halifax.....		Bridge	*11,043.05	5-5-22	Von Glahn & Talbott.
160	Franklin-Wake-Nash	8.93	T. S.	53,722.95	3-7-23	Chandler & Ragland—Southern Dray Co.
166	Northampton.....	.47	Bridge	17,954.75	9-14-22	W. D. Murrey—Sadler Corp.
186	Pitt.....	9.57	R. C.	*248,103.78	8-5-22	Cheatwood & Driscoll.
209	Craven.....	2.65	P. & R. C.	*114,569.02	2-15-22	Eagle Engineering Co.
218	Wayne-Duplin.....	16.06	Graded	80,804.50	2-24-23	C. W. Lacy.



## STATUS OF STATE WORK IN NORTH CAROLINA---Continued

## Projects Completed (Continued)

NO.	COUNTY	LENGTH	TYPE	ESTIMATED COST	COMPLETED	CONTRACTOR
227	Greene.....	6.81	A. C.	\$ 239,797.80	1-25-23	West Construction Co.—Union Paving Co.
255	Lenoir.....	0.82	S. A.	30,384.89	8-18-22	West Construction Co.
281	Wayne.....		Bridge	*21,225.49	1-15-23	P. R. Ashby.
338	Cumb-Samson.....		Bridge	26,323.99	9-26-22	Roanoke Bridge & Iron Works.
339	Harnett-Cumb.....	.754	T. S.	19,067.28	8-31-22	Porter & Boyd
341	Cumb-Hoke.....	.2	Graded	*1,042.55	2-28-22	W. B. Covington
375	Pender.....	13.56	S. C.	68,830.09	11-21-22	A. W. McClay
388	Robeson.....	3.35	R. C.	137,009.40	9-28-22	C. W. Lacy—Roanoke Bridge & Iron Co.
409	Durham.....	0.5	Graded	*5,409.10	8-7-22	J. P. Dicus.
410	Durham.....	2.3	R. C.	*81,105.75	9-28-22	C. D. Riggsbee.
427	Granville.....	5.12	A. C.	178,257.64	1-4-23	R. G. Lassiter & Co.
436	Harnett.....	21.91	Gravel	202,563.88	1-15-23	C. G. Kershaw Const. Co.—Hobbs & Kitchen.
445	Lee.....	5.91	T. S.	18,692.85	1-15-23	C. B. Hester.
446	Lee.....	5.90	A. C.	197,188.22	5-24-22	Atlantic Bitulithic Co.—O. A. Mann & Co.
453	Orange.....		Bridge	33,706.80	1-9-23	Geo. W. Kane.
454	Orange.....	4.28	P. C.	197,675.32	3-6-22	Elliott, Sholes & Teer.
455	Orange.....	4.19	T. S.	*55,214.44	9-28-22	J. F. Mulligan Const. Co.—P. R. Ashby.
482	Wake.....	6.64	A. C.	*184,393.31	9-23-22	R. M. Hudson Company.
483	Wake.....	0.54	R. C.	*15,630.74	8-7-22	C. D. Riggsbee.
500	Alamance.....	5.22	Graded	*36,844.34	1-17-22	W. W. Tuck & Son—A. M. Hazell, Connerate—Quist Construction Co.
501	Alamance.....	13.1	T. S.	30,927.27	2-28-23	W. M. Shook-Hanford Bros.
505	Alamance.....	0.42	S. A.	*15,229.74	6-23-22	Hedrick Construction Co.
511	Caswell.....	14.80	T. S.	73,242.18	10-11-22	White & Simpson-C. B. Hester
524	Davidson.....	0.3	S. A.	*9,941.54	1-20-22	Town of Lexington.
525A	Davidson.....	.5	S. A.	*16,419.86	6-27-21	Town of Lexington.
526	Davidson.....	3.77	P. C.	*131,269.66	10-25-22	Hagedorn Constr. Co.—Heilig & Sherrill.
538	Guilford.....		Bridge	7,039.01	2-21-23	J. L. Brinkley.
539	Guilford.....	0.64	S. A.	21,639.20	1-19-23	Robt. G. Lassiter & Co.
540	Guilford.....	18.00	Recon.	16,527.54	1-23-22	J. T. Plott.
567	Moore.....	2.96	T. S.	*9,967.53	9-18-22	C. E. Teague.
601	Alexander.....	3.07	T. S.	33,630.45	.....	Guss Ginn-R. M. Thurmond
630A	Gaston.....	3.02	A. C.	*98,854.41	7- -22	W. F. McCanless.
633A	Gaston.....	13.77	A.C. & Rec.	180,000.00	10-5-22	Gaston County
634	Gaston.....		Bridge	4,500.00	.....	State Forces.
638	Iredell.....	7.88	A. C.	262,142.65	1-20-23	Thompson-Caldwell Co.
652	Mecklenburg.....		Bridge	1,923.28	10-30-22	State Forces.
655	Mecklenburg.....	1.57	P. C.	63,695.17	7-31-22	Speed-Parker Co., Inc.—Luten Bridge Co.
656	Mecklenburg.....	10.4	Bit.-Mac.	200,000.00	10-30-22	State Forces.
657	Mecklenburg.....	13.80	Recon.	20,000.00	10-30-22	State Forces.
692	Union.....	2.28	A. C.	*65,279.20	12-28-21	Redmon Construction Co.
693	Union.....	1.14	Gravel	3,324.48	.....	Sykes-Collins Co.
695	Union.....	4.51	A. C.	*138,738.07	9-14-22	Redmon Construction Co.
710	Ashe.....	3.14	P. C.	*142,707.93	8-17-22	Pittman Construction Co.
719	Caldwell.....		Bridge	*7,906.87	6-26-22	Cottrell & Howard.
719B	Caldwell.....	.99	Gravel	1,665.33	11-15-22	J. G. Bumgardner
722	Caldwell.....	7.00	Recon.	*20,923.25	1-18-22	County Forces.
725	Caldwell.....	4.00	Recon.	28,015.46	2-24-23	County Commissioners.
751	Stokes.....	7.16	T. S.	*35,124.08	10-4-21	W. E. Graham.
760	Surry-Alleghany.....	6.9	T. S.	*32,084.18	11-5-22	W. E. Graham.
764	Surry.....	1.63	R. C.	50,588.20	2-4-23	Leaksville Lumber Co.
801	Avery.....	.99	W. B. Mac	22,350.24	10-26-22	Geer & Wilson.
823	Cleveland.....	1.90	P. C.	*80,421.65	8-15-22	Southern Paving Co.—Z. B. Weathers & Son.
844	McDowell.....	1.8	P. C.	*61,233.34	12-13-21	Bolton Construction Co.
845	McDowell.....	7.19	Gravel	132,177.93	12-22-22	J. W. Stapp Constr. Co.—Praytor, Howton & Wood.
855B	Mitchell.....		Bridge	*22,699.85	8-22-22	Luten Bridge Co.
866	Polk.....	5.96	Bit Mac	180,393.40	11-21-22	Southern Paving Co.—Henry Constr. Co.
875	Rutherford.....		Bridge	*6,151.61	7-18-22	Geer & Wilson.
877	Rutherford.....	9.79	T. S.	64,563.73	8-7-22	Geer & Wilson.
878	Rutherford.....	6.55	T. S.	44,984.50	10-27-22	Michaux Const. Co.—Geer & Wilson.
879	Rutherford.....		Bridge	*6,781.99	6-21-22	Austin Bros. Bridge Co.
880	Rutherford.....		Bridge	24,679.43	9-28-21	Austin Bros. Bridge Co.
910	Cherokee.....	7.56	Gravel	76,743.59	2-24-23	Ross Bros. Constr. Co.—W. T. Moore Concrete Prod. Co.
942	Haywood.....	0.57	Gravel	*6,490.43	2-1-22	O'Brien Construction Co.

(\*Final Cost)

## PROJECTS UNDER CONTRACT

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	CONTRACTOR
107	Bertie.....		Bridges	\$ 50,127.00	Atlantic Bridge Co.—Roadway not let.
138-B	Northampton-Halifax.....		Bridge	347,188.74	Pensacola Shipbuilding Co.
147	Hertford.....	17.36	T. S.	73,580.00	Nello Teer—Atlantic Bridge Co.
155B	Martin.....	19.3	P. C.	493,900.40	W. T. Hadlow.
163	Nash.....	14.96	P. C.	409,592.40	Public Service Production Co.



*Projects Under Contract (Continued)*

275	Sampson.....	.....	Bridges	\$ 8,063.40	Rhyne & Kitchen—Roadway not let.
291B	Wilson.....	.....	Bridges	11,809.30	Jno. M. Ogden & Co.—Roadway not let.
391A	Robeson.....	1.01	S. A.	43,332.08	R. G. Lassiter & Co.
486	Wake.....	9.04	T. S.	41,074.00	O. A. Mann & Co.
671	Rowan.....	7.34	A. C.	310,714.14	Thompson, Caldwell Co.—Atlantic Bridge Co.
743	Forsyth.....	11.1	A. C.	376,441.30	Atlantic Bitulithic Co.
785	Wilkes.....	2.52	P. C.	78,703.50	D. J. Brookshire & Co.
953	Jackson.....	12.72	Graded	118,186.75	C. C. McCabe.
991	Transylvania.....	7.31	Graded	206,912.00	Gibson Construction Co.

## STATUS OF FEDERAL AID WORK IN NORTH CAROLINA

*Projects Under Construction*

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	BEGUN	CONTRACTOR
15	Guilford.....	4.205	Bit. Mac.	\$ 5,441.75	9-1-17	County Commissioners.
61	New Hanover.....	2.186	P. C.	234,841.39	7-12-20	C. W. Lacy.
69	Transylvania.....	9.348	W. B. Mac.	231,409.04	3-25-20	Allport & Alexander Construction Co.
94A	Mitchell.....	5.04	W. B. Mac.	190,375.13	6-22-20	Gibson Construction Co.
125A	Alleghany.....	4.99	Bit. Mac.	153,899.13	11-22-21	W. E. Graham.

*Summary*

## WORK UNDER CONTRACT

Type	STATE		FEDERAL AID	
	Length	Cost	Length	Cost
S. A.....	1.01	\$ 43,332.08	.....	\$.....
P. C.....	26.48	982,196.30	.....	.....
A. C.....	18.44	687,155.44	.....	.....
Graded.....	2.67	251,518.75	.....	.....
T. S.....	26.40	114,654.00	.....	.....
Bridges.....	.....	417,188.44	.....	.....
Total.....	75.00	\$ 2,496,045.01	.....	\$.....

## WORK UNDER CONSTRUCTION

P. C.....	309.87	\$ 10,268,913.56	2.19	\$ 234,841.39
R. C.....	63.64	2,289,835.36	.....	.....
A. C.....	280.21	8,717,595.61	.....	.....
S. A.....	10.84	127,949.00	.....	.....
Bit. Mac.....	57.36	1,428,989.68	9.19	159,340.88
W. B. Mac.....	143.27	2,420,390.77	14.39	421,784.17
Brick.....	9.50	217,405.72	.....	.....
T. S.....	346.31	2,670,345.83	.....	.....
S. C.....	189.44	1,309,864.78	.....	.....
Gravel.....	100.33	1,315,731.70	.....	.....
Graded.....	196.65	1,438,854.50	.....	.....
Recon.....	20.67	179,000.00	.....	.....
Cord.....	2.40	55,818.01	.....	.....
Bridges.....	.....	1,039,858.10	.....	.....
Total.....	1,730.49	\$ 33,356,507.76	25.77	\$ 815,966.44

## WORK COMPLETED

P. C.....	19.11	\$ 791,572.09	26.56	\$ 889,940.67
R. C.....	27.92	903,922.32	.....	.....
A. C.....	55.93	1,544,651.30	42.29	1,521,368.25
S. A.....	2.68	93,669.23	22.91	763,048.82
Bit. Mac.....	16.36	380,393.40	30.62	798,895.02
W. B. Mac.....	.99	22,530.24	14.00	303,505.78
T. S.....	84.11	471,221.44	509.18	5,228,132.54
S. C.....	15.56	68,830.00	83.90	785,198.22
Gravel.....	38.37	421,300.31	42.56	488,699.18
Graded.....	22.47	125,360.82	29.23	252,426.17
Recon.....	42.80	89,966.25	.....	.....
Bridges.....	.....	207,861.71	.....	651,051.10
Total.....	326.30	\$ 5,121,279.11	801.25	\$ 11,682,265.75

Total Roadway..... 2,902.08

Total Cost..... \$53,513,013.62

## LEGEND

P. C.—\*Plain Concrete. R. C.—\*Reinforced Concrete. A. C.—\*Asphaltic Concrete. S. A.—\*Sheet Asphalt. Bit. Mac.—\*Bituminous Macadam. W. B. Mac.—\*Water Bound Macadam. T. S.—†Top Soil. S. C.—†Sand Clay. Gravel—†Gravel. Graded—†Graded. Recon.—†Reconstruction. Cord.—†Corduroy.

\* Hard Surface. † "G" Type.  
Corrected to April 1, 1923.



## STOP! LOOK!! LISTEN!!!

An act to require every person driving any motor vehicle on a public highway on approaching railroad grade crossings to stop, look, and listen before passing thereover.

*The General Assembly of North Carolina do enact:*

SECTION 1. That no person operating any motor vehicle upon a public road shall cross, or attempt to cross, any railroad or interurban track intersecting the road at grade other than a crossing at which there is a gate or a watchman (except an electric railway track in a city, town, or village) without first bringing said motor vehicle to a full stop at a distance not exceeding fifty (50) feet from the nearest rail. That no failure so to stop, however, shall be considered contributory negligence *per se* in any action against the railroad or interurban company for injury to person or property; but the facts relating to such failure to stop may be considered with the other facts in the case in determining whether the plaintiff was guilty of contributory negligence.

SEC. 2. That every railroad or interurban company operating or leasing any track intersecting a public road at grade shall place a sign-board not less than ten feet from the ground, on the right side of the road, forty inches by fifty inches, one hundred feet from said crossing, which shall be painted with red lettering, to insure warning of the proximity of the crossing and notice to stop said motor vehicle, with the following: "N. C. Law. Stop!": *Provided*, this act shall not interfere with the regulations prescribed by towns and cities.

SEC. 3. That any person violating the provisions of this act shall be guilty of a misdemeanor, and upon conviction shall be fined not more than ten dollars, or imprisoned not more than ten days, or both, in the discretion of the court.

SEC. 4. That this act shall be in force from and after the first day of July, one thousand nine hundred and twenty-three.

In the General Assembly, read three times and ratified this the 6th day of March, 1923.

(Signed) W. B. COOPER,

*President of the Senate.*

(Signed) JOHN G. DAWSON,

*Speaker of the House of Representatives.*

Examined and found correct:

(Signed) W. R. VAUGHAN,

*For Committee.*

## Edwards Ferry Bridge to Equal Causeway at Williamston

*(Continued from page 3)*

concrete cap. The bents will be on 20-foot centers with three piles to a bent. These piles will be sixteen inches in diameter and, though test piles have not been driven by the contractors, the estimated length of the piles is thirty-five feet. The superstructure of the flood-water trestles will be of creosoted lumber with a rock asphalt wearing surface similar to that on the bridge. The substructure is so designed that it will support a concrete superstructure should it ever be deemed necessary to replace the creosoted wooden structure.

The contract for the bridge and its approaches was awarded on January 13, 1923, to the Pensacola Shipbuilding Company of Pensacola, Fla., and should be completed within 350 working days in accordance with the contract.

This bridge is the fourth large structure to be placed under way by the Commission, the others being the Swift Island Bridge (F. A. Project, No. 116), the Williamston Bridge (F. A. Project, No. 86), the Yadkin River Bridge at Salisbury (State Project, No. 673). The first two mentioned have been completed while construction has begun on the latter.



## P & H 206 EXCAVATORS AT LITTLEFORD, MARSDEN, AND BUNYON, NORTH CAROLINA

The Public Service Production Co. are using three of their eight P & H "8-in-1" machines on North Carolina work,—at Littleford, Marsden, and Bunyon.

This company, after operating two P & H Excavators for a period of a year along with other equipment, ascertained for themselves the value of the P & H,—the low upkeep,—the greater production,—the all-around utility.

That is why they have purchased six additional P & H 206's. They know that there are differences in such equipment, just as there are in motor trucks.

*New Bulletin 58-X sent on request.*

*Excavating Machinery Division*

**PAWLING & HARNISCHFEGER CO.**

*Established in 1884*

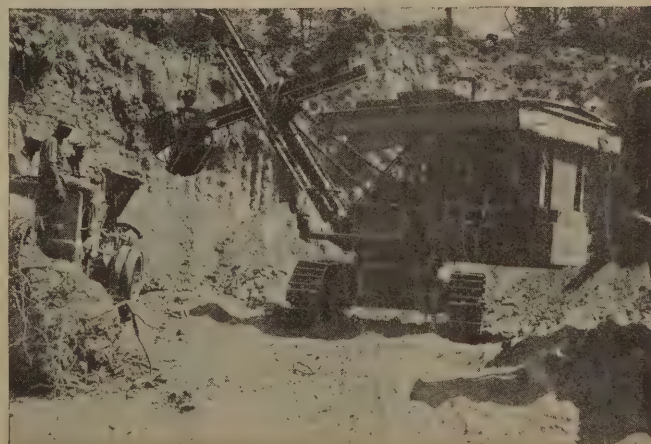
**3853 National Ave., Milwaukee, Wis.**

**SALES AGENTS:**

**TRACTOR & MACHINERY SALES COMPANY,**  
1631 W. Broad St., Richmond, Va.



**GASOLINE SHOVEL**



P & H 206 Excavator-Crane with grab bucket, is shown above,—same machine may be used with dragline bucket, scraper bucket, orange-peel bucket, pile-driver rig; changed to powerful shovel by replacing crane boom with shovel boom, or to skimmer scoop by replacing crane boom with skimmer boom.



# Over a Million Dollars Worth of Grease and Oil for Cement Mills Every Year

**I**F YOU were to ask a dozen automobile owners how much grease their cars consume in a year's time it is doubtful if any two answers would be the same. Manufacturers of high priced cars will tell you that from 16 to 20 pounds of grease should be used every 4,000 miles, while lower priced cars demand only a small percentage of this amount.

Manufacture of portland cement requires the heaviest kind of machinery. Some of the giant rotary kilns weigh as much as 670,000 pounds—more than four Pullman cars. The larger rock crushers weigh 425,000 pounds. Running in a dust-laden atmosphere the bearing parts of this heavy machinery are subjected to exceptionally hard wear and tear. Large quantities of grease and oil must be applied frequently to assure smooth and efficient operation.

The grease requirements of the cement industry last year would supply over 187,000 high priced automobiles for a 5,000-mile trip.

They would supply the 3,000 cabs of one of the largest taxicab companies in the country for 31 years.

It would supply approximately 268,000 high-priced automobiles for a 5,000-mile trip.

The lubricating oil used last year on cement machinery would operate over 42,000 taxicabs for a year, with each cab using one quart of oil per day.

In other words, the cement industry last year used over 3,800,000 pounds of grease and over 3,700,000 gallons of lubricating oil—costing well over a million dollars. Although a low grade of oil is suitable for some of the heavy kilns and crushers, the power plants and finer machinery demand the highest quality lubrication, and only the best oils are used.

In addition to the heavy grinding and crushing machinery, constant lubrication is necessary on steam shovels and railroad equipment, from the quarry to the mill; sacking machines, sack cleaning and repairing machines, and other mill equipment.

Lubrication of conveyor machinery itself is a considerable item, for hundreds of miles of conveyors are in use in cement plants.

In spite of the frequent and generous use of grease and oil, the life of machinery in cement plants is probably less than in any other manufacturing industry.

One out of every five operative employees in a cement plant is required for repair work.

## OSGOOD

*Heavy Duty*

REVOLVING

STEAM

SHOVELS

WILL HELP



*Osgood ¾ yd. H. D. Building Mountain Road*

Finish your contracts on time and with a good margin, because of their speed, and durability. Low operating costs must also be considered for a profitable job. Look an OSGOOD over carefully and note its many worthwhile features. Our Bulletins explain them in detail. Yours for the asking.

*3-4 and 1 cu. yd. capacities*

**The OSGOOD COMPANY**  
MARION, OHIO, U.S.A.



# The Andresen Road Repair Outfit

(PATENTED)

## What it is

The Andresen Road Repair Outfit combines in one unit all the equipment necessary for making hot bituminous paving mixtures. It is a portable device, easily moved about and carries all materials and tools. There is nothing mechanical about its operation, therefore requires no skilled labor to operate.



## What it Does

The Andresen Road Repair Outfit keeps pavements smooth all the time. With a little common labor it produces cheaply, simply and easily, hot-mixed bituminous paving aggregates for repairing all types of pavings. Repairs thus made are lasting and economical.

The Andresen Road Repair Outfit is big enough to produce enough patching material to keep a repair gang busy. It can be successfully used for repairing concrete and brick as well as bituminous pavements. Leading road officials everywhere have adopted it for efficient maintenance work. A booklet, "Modern Methods for Maintaining Roads and Streets," completely describes this outfit. Copy sent on request.

**LITTLEFORD BROS.**

453 E. PEARL ST.

CINCINNATI, O.

# HOW MUCH ARE YOU PAYING OUT

## *As the Cost of Loading Your Concrete Mixer?*

The men who have made the long profit on this year's road contracts have not paid the price of hand shoveling. They have cut the payroll and used machinery—a one-man Loader at the sand and stone stockpiles. The difference in cost has paid a big return on their equipment investment—in some cases paid for it free and clear.

The men who are looking ahead

choose Haiss Loaders because their cost per unit of work done is lower. They do more work because they alone have a combination of powerful digging buckets, positive self-feeding propellers, and a slow-speed crowding gear to keep the machine always digging into the pile—all working simultaneously. And the machine is built stronger, requires less maintenance and is good for a longer life.

What Haiss Loaders have done for others, they can do for you. Ask us for comparative cost data—no obligation. You'll want Bulletin 521, too!

**The George Haiss Mfg. Company, Inc.**  
Park Ave. and 143rd. St. New York, N. Y.

ESTABLISHED 1892

Representatives throughout the world

Millars' Timber & Trading Co., London

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# Tarmac

## MAKES GOOD ROADS

*A scientifically prepared coal tar for the construction  
and maintenance of roads and streets.*

*Your Inquiries are Solicited*

### AMERICAN TAR PRODUCTS COMPANY

PLANTS:

Chicago, Ill.  
St. Louis, Mo.  
Youngstown, O.  
Steubenville, O.

GENERAL OFFICES:

208 SOUTH LA SALLE STREET  
CHICAGO

PLANTS:

Milwaukee, Wis.  
Birmingham, Ala.  
Rockton, Ill.  
Chalmette, La.

## "Standard" Paving Asphalt

has been successfully used on some of the most important highway projects in North Carolina.

This asphalt is refined from the straight Mexican asphaltic base petroleum, its purity being over 99.8%. "STANDARD" PAVING ASPHALT meets all the tests of a paving cement for asphalt concrete or sheet asphalt pavement, its uniformity and ability to resist extremes of temperature making it especially suited for these types of construction.

"STANDARD" PAVING ASPHALT has been used in practically every large city in the east.

### STANDARD OIL COMPANY (NEW JERSEY)

Baltimore, Md.

Charlotte, N. C.

Newark, N. J.

Richmond, Va.

REFINERIES: Bayonne, N. J., Baltimore, Md., Charleston, S. C.



# SLAUGHTER CULVERT COMPANY

300 - 301 MASONIC TEMPLE

RALEIGH



*Metal Culvert*

*Concrete Culvert*

## Washed and Screened Sand Gravel Crushed Stone

Conforming to the specifications of the North Carolina  
State Highway Commission.

*Prompt shipments by rail or water*

*Favorable freight rates to all North Carolina points.*

*Quotations gladly furnished on request.*

## THE ARUNDEL CORPORATION

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GEO. E. HOPPE, PRES.

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# TRACTOR & MACHINERY SALES CO.

## DISTRIBUTORS

### RICHMOND, VIRGINIA

*We Offer You the Following Lines:*

## HOLT "CATERPILLAR" TRACTORS

### LAKEWOOD ENGINEERING CO.

LAKEWOOD MIXERS  
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 CONCRETE PLACING PLANTS, TOWERS,  
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INDUSTRIAL CARS AND TRACK

### AUSTIN WESTERN ROAD MACHINERY CO.

MOTOR ROLLERS  
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ROAD DRAGS  
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### PAWLING & HARNISCHFEGER CO.

GAS SHOVELS  
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TRENCHING MACHINES

### The GEO. HAISS MANUFACTURING CO.

WAGON LOADERS

CONVEYORS

### BAKER MANUFACTURING CO.

BAKER-MANEY WHEELERS

WE ALSO OFFER A FULL LINE OF SLOW SPEED TRAILERS FOR ALL PURPOSES; IN FACT, ANYTHING IT TAKES TO BUILD OR MAINTAIN A STREET OR ROAD.





Long Years *of* Life Ahead *of* Them



## *National Lock-Joint Cast-Iron Pipe*

The Pipe *of* Short Units, Long Service *and* Low Costs

*The Pipe that locks effectively, that prevents Separation  
and assures alignment to perfection.*

The pipe which solves culvert renewal problems with least expense, greatest efficiency. The pipe that does not rot or disintegrate, the pipe that is mechanically correct and has proved itself the solution of the culvert problem.

### CONTRACTORS *and* ENGINEERS, GET THIS:

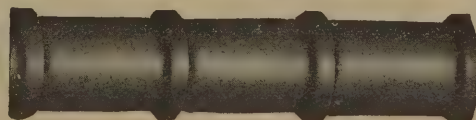
TWO MEN, without the use of any tools whatsoever, will unload, handle and install all sizes up to and including 36 inches in diameter.

It is as cheap to handle and install as clay pipe WITH NO BREAKAGE LOSS. In shallow trench work the entire culvert can be built up, interlocked and rolled into place in one operation.



AMERICAN  
CASTING CO.

Birmingham, - - Alabama





# CRUSHED STONE

*for*

CONCRETE PAVEMENT

*for*

TOPEKA OR WARRENITE SURFACING

*for*

CONCRETE BRIDGES

*for*

CONSTRUCTION WORK *of any* KIND

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*For Delivered Prices in Any Quantity*

*Wire, Write or Phone*

## ORINOCO SUPPLY CO.

WINSTON-SALEM, N. C.



*Report of Inspection of*

# A PERMANENT CULVERT

Installed ten years ago in Wake Forest, North Carolina.



Time has tested ARMCO CULVERTS. They have proved their worth

## TOWN OF WAKE FOREST

LIGHT AND WATER DEPARTMENT

O. M. McKAUGHN, Superintendent  
P. E. FOWLER, Clerk

Wake Forest, N. C.  
June 27th, 1922

The Dixie Culvert & Metal Company,  
Atlanta, Ga.  
Gentlemen:

Replying to your inquiry as to our experience with the sixty foot of 72" Armco Culverts bought in 1913, will inform you that these were installed in two culverts, one 24 ft. long and the other 36 ft. under Roseville road several hundred feet east of the depot lot.

These were inspected today and found to be in excellent condition. One of them contained several inches of sand but beneath the sand the metal was clean and bright. The other culvert was entirely free from any sediment and was bright and clean.

One of these culverts has only a few inches of dirt on it, but it shows no sign whatever of giving in, though heavy truck loads of stone are hauled over it as our quarry here loads about three carloads of stone a day, all of which pass over this culvert.

(Signed) W. W. Bobbett



## THE DIXIE CULVERT & METAL COMPANY

ATLANTA, GEORGIA

J. G. BALDWIN,  
ASHEVILLE, N. C.

W. H. McNEILL,  
LAKEVIEW, N. C.



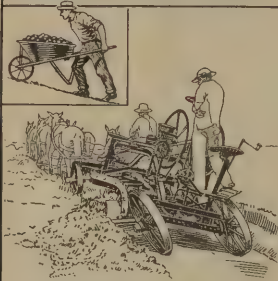




ONE OF THE NORTH CAROLINA STATE HIGHWAY DEPARTMENT'S No. 12 ROAD KING CUTTING DOWN A ROUGH DITCH BANK

## *in* North Carolina

HE LEANS TOWARD THE LOAD



SO DOES THE ADAMS  
ADJUSTABLE LEANING WHEEL GRADER

**A**DAMS Graders have proved their superiority and their ability to build the most miles of Good Roads per dollar or per day. There's only one reason—the Adjustable Leaning wheels are an exclusive feature on Adams Graders by means of which the weight of Adams Graders is leaned toward and balanced against the load. This overcomes side-draft and skidding, increases capacity and lessens the draft. This feature also enables Adams Graders to do difficult ditch and bank work, not successfully accomplished with other graders.

Every Adams Grader is guaranteed to prove these claims. Write today for catalog and let us show you how Adams Graders will reduce your grading costs.

ADAMS GRADERS are built in 6½ ft. to 12 ft. blade lengths. There is a size to suit your needs and power exactly.

*Write Our Local Distributor*

**J. C. BENJAMIN**

733 WEST HARGETT STREET

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**J. D. ADAMS & COMPANY**

HOME OFFICE AND FACTORY:

INDIANAPOLIS, INDIANA

# ADAMS ADJUSTABLE LEANING WHEEL GRADERS



## LEHIGH - - THE NATIONAL CEMENT



ONE of the most important elements in uniform engineering work is uniform raw material. This can sometimes be obtained only at great inconvenience and expense.

In concrete work, however, Lehigh makes possible this desired uniformity without the delays so frequently incident to this end.

Coupling nation-wide distribution with a *square deal policy*, Lehigh occupies a unique position in the industry and renders to engineer and contractor a definite assurance both of product and of service.

---

16 MILLS FROM COAST TO COAST

---

## LEHIGH PORTLAND CEMENT COMPANY

CHICAGO, ILL. ALLENTOWN, PA. SPOKANE, WASH.

NEW YORK CITY

BOSTON, MASS.

PHILADELPHIA, PA.

BUFFALO, N. Y.

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KANSAS CITY, MO.

MASON CITY, IOWA

RICHMOND, VA.

NEW CASTLE, PA.

---

ANNUAL CAPACITY 16 MILLION BARRELS

---



**I**N twenty years Portland cement has advanced from comparative insignificance to the leading position in the construction material field. The ready adaptability of Portland cement to every kind of construction, from fence posts on the farm to gigantic dams and highways of endurance; the facility with which it can be handled; its durability which gives the highest degree of permanence, backed up by constant attention to perfection in manufacture and the most intelligent and comprehensive educative and advertising work that has ever been given to any building material, all combine to account for the remarkable progress achieved by the Portland cement industry. We take just pride in having always kept faith with the sound principles followed by this great industry.

Every requirement for the manufacture of the high standard of quality laid down by the established scientific standard specifications is rigidly followed in making Clinchfield Portland cement. Service in the fullest meaning of the word is our watchword in dealing with our customers.

Builted upon this firm foundation of quality and service the Clinchfield plant has steadily grown and expanded and its products have been used with constant satisfaction for all classes of construction work in the South.

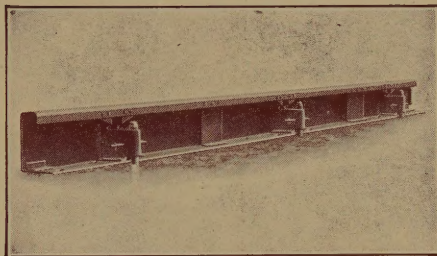
**CLINCHFIELD PORTLAND CEMENT CORPORATION**

Office and Mills: Kingsport, Tennessee



# EARNEST

## ROAD MACHINERY & CONTRACTORS' EQUIPMENT



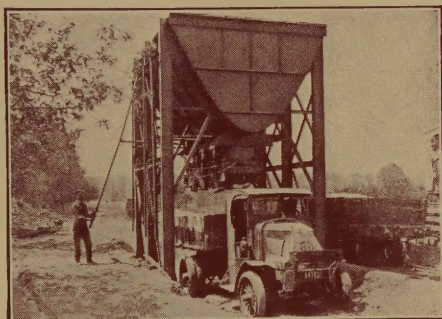
### BLAW-KNOX STEEL FORMS

The strongest *ROAD FORM* made. Lasting equipment, faster construction, better roads and bigger profits.

Positive staking. Only *two parts*, consisting of the form itself and the stake as the wedge is cotterkeyed to the form.

Also furnish standard equipment for all types of curb and gutter.

The interchangeable features permit of a minimum amount of equipment.



### BLAW-KNOX STEEL STORAGE BINS

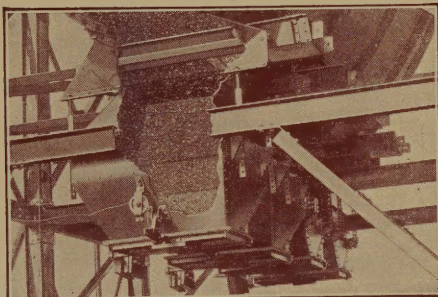
These Steel Bins are standardized and portable.

*Capacities:*

Small Charging Bins—12 and 24 tons.

All-Steel Suspension Bins—30-50-75-100 tons.

Steel Trussed Bins—65-116-186-251 tons.



### BLAW-KNOX MEASURING BATCHERS

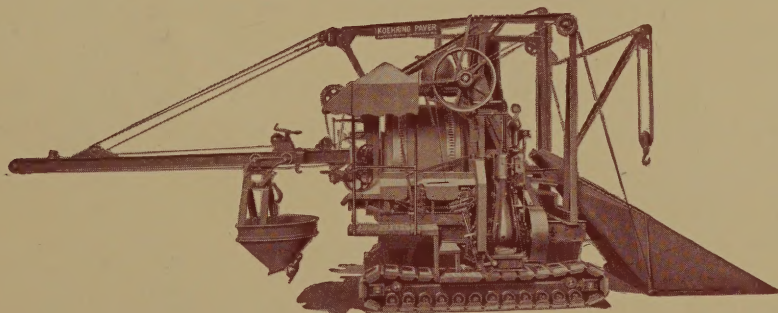
Provide an adjustable automatic means for exact measurement, striking off and dumping material for any specified mix. They work fast and require only one man for operation of the entire central proportioning plant, excluding the crane.

### KOEHRING PAVERS—CRANES—MIXERS

Dependability—Fast operation—Long service—Economy.

These four money making factors are embodied, by design, careful selection of materials and expert workmanship in all Koehring equipment.

Known throughout the country as "Heavy Duty" machines, which means no short cuts in construction, no slighting of the wide margin of safety essential to dependability and service life.



### OTHER PRODUCTS

C. H. & E. Triplex Road Pumps

Jeffery Tankred Loader

Blaw Clamshell Buckets

Blaw Truck Turntables

Steel Buildings for Cement

Houses

Trench Excavators and Backfillers

Hoisting Outfits

Bar Cutters and Benders

## EARNEST BROS.

RICHMOND PHONES

MADISON 6460

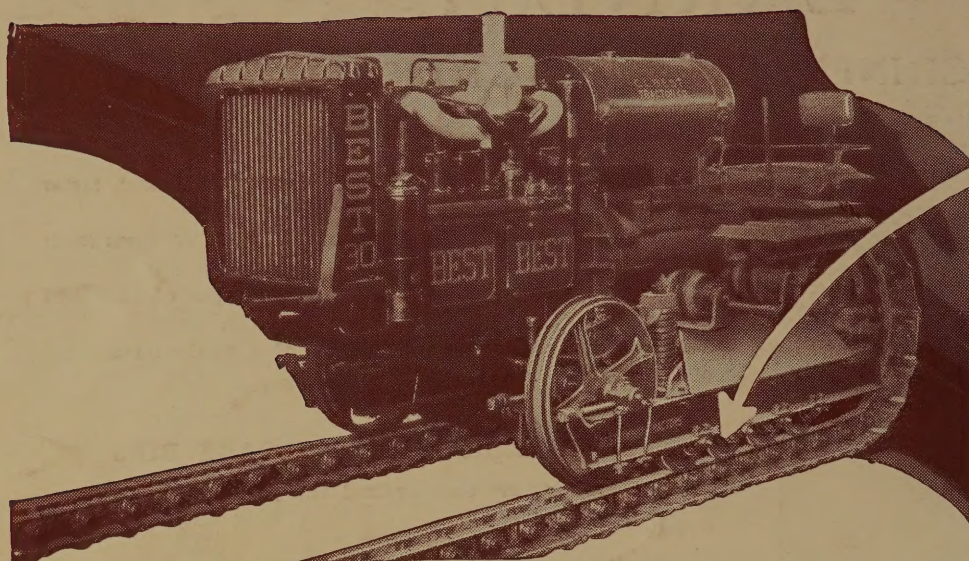
MADISON 1381

805 E. FRANKLIN ST.  
RICHMOND, VA.

BRANCHES:  
CHARLOTTE, N. C.  
RALEIGH, N. C.

*"Earnest Service by Earnest Bros."*





## TRUCK ROLLERS *that* LAST!

THE DRIVING WHEELS of the most powerful locomotives have forged steel rims.

The Truck Rollers of a track type tractor support the weight of the tractor and the flanges of rollers must withstand severe jars and side strains of side hill work and rough going.

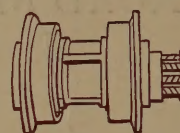
On Best Tractors the flanged rims of truck rollers are drop forgings—nothing less—forged into shape under heavy steam hammers, from heated steel of special analysis. After being forged the rims are annealed, bored and reamed, then turned true on the outside tread. They are next shrunk on accurately machined hubs—be-

ing hardened at the same time—hardened to resist battering blows just as are the heads of first-class forged hammers or sledges.

The rollers, complete, are mounted on anti-friction bearings to insure easy running, bearings with seals to retain lubricant and to prevent entrance of sand and ruinous grit.

The truck rollers of Best Tractors run over tracks which are true and straight. Tracks are made from drop forged hardened links which have been accurately machined top and bottom and large hardened spools and pins at each joint contribute to the long life which may be expected from the tracks on Best Tractors.

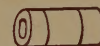
E. F. CRAVEN, STATE DISTRIBUTOR  
"The Road Machinery Man"  
GREENSBORO, N. C.



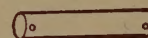
Truck Roller



Track Link Assembly



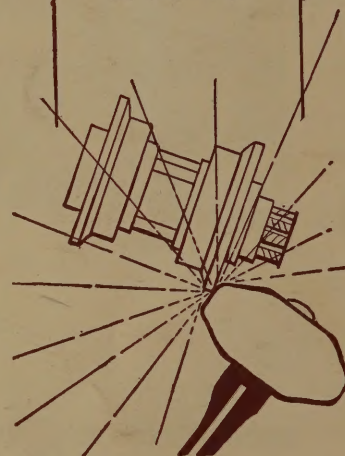
Track Spool



Track Pin



Heavy Cotter for Track Pin



"When Greek meets Greek." Both the sledge and the flanged roller rims are hardened drop forged steel.

# BEST TRACTORS